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THE MEDICAL JOURNAL OF AUSTRALIA.

VOL. I.—5TH YEAR. SYDNEY: SATURDAY, JUNE 15, 1918. No. 24.

GUNSHOT WOUNDS OF THE KNEE-JOINT.

By **Balcombe Quick, F.R.C.S.,**

Lieutenant-Colonel, Australian Army Medical Corps; Surgical Specialist, First Australian General Hospital, France.

(*Continued from page 474.*)

Infection of the Joint.

If, on the other hand, the pulse becomes more rapid (90 to 100, or more) and the temperature keeps up, even if only in the neighbourhood of 37.5° C., and particularly if the specimen of joint fluid obtained has shown an excess of polymorpho-nuclear cells, or if it has proved infected on smear or culture, it is fairly certain that the effort to free the joint from organisms has failed. At this stage it is helpful to secure another specimen of the contents (with an exploring syringe, if the joint has been closed). It often happens that a fluid, previously found to contain an excess of polymorpho-nuclear cells, but sterile on culture, will now give a growth of organisms. Opportunity should be taken to wash the joint out with eusol or other fluid of choice (through the same exploring needle if necessary). The effect of this upon pulse and temperature during the next 24 or 36 hours may furnish a useful guide to the severity of the infection. In the same way, when organisms are present, examination of a smear will show to what extent they are intracellular, and the presence of a large proportion within the polymorpho-nuclear cells is a hopeful sign.

The condition now present is an arthritis of the knee of greater or lesser severity, similar to that met with in civil practice, except that a certain number will be found to be infected with anaerobic organisms.

Drainage of the Knee Joint.

The drainage of a knee-joint has always been a problem of much perplexity to the surgeon, and thus a considerable number of the papers written on war surgery have dealt with this subject.

Whilst there is a large measure of agreement to be noticed as to the treatment of knee wounds before the establishment of a frank arthritis, an equally large divergence is found once this has declared itself.

A very instructive paper on wounds of the knee-joint was read some months ago by Colonel Gilbert Barling, C.B., A.M.S., before the surgeons of the hospitals in this area, to which he was then Consulting Surgeon. In the discussion which followed, every plan of treatment of the infected joint was advocated, from simple rest with opening of any pointing collection of pus, on the one hand, to amputation immediately pus was found in the joint on the other. The difficulty of getting satisfactory drainage is, of course, well known. Briefly stated, and without going too far into anatomical details, this is due to:—

1. The complexity of arrangement of the internal structures of the joint, *i.e.*, synovial folds, and semilunar cartilages.
2. The close apposition of the articular surfaces, and of the lateral ligaments to the sides of of these surfaces.
3. The presence of the several synovial-lined diverticulæ, particularly that around the tendon of the popliteus, and the recesses behind the femoral condyles.
4. The risk to important structures associated with drainage through the popliteal space.

Moreover, given an imperfect drainage, the effects of absorption are apt to be severe from the very free blood supply possessed by the synovial membrane, periosteum and bone in this region.

The infected joint may be said to be divided into two compartments, anterior and posterior. The anterior consists of the supra-patellar pouch and bursa and the portion of the cavity which lies between the articular surfaces of patella and femur. This is quite accessible to drainage. It is separated from the posterior part by the close apposition of the articular surfaces of the femur and tibia, and the swollen intra-patellar pad of fat and *ligamentum mucosum*, together constituting a very complete barrier. The posterior compartment of the joint, then, is that part behind this barrier. Any system of drainage which deals with the anterior compartment alone, can at best remove only the small quantity of pus which may make its way past the barrier from behind. Thus pus will accumulate here under more or less tension, quite out of reach of any irrigation, through the front of the joint. The swelling of the synovial folds—fat pad, *ligamentum mucosum* and *ligamenta alaria*—has never, in my experience, resulted in shutting off the back of the joint from an infection arising in the anterior portion. An arthritis limited to this latter is spoken of as sometimes occurring, but I have not met it. Where anterior drainage alone suffices to cure, it is probable that posterior infection is present, but is of mild type and is eventually overcome. The recovery in certain cases under such treatment, and under even more conservative measures, such as repeated aspirations, considered alongside the failures that may be experienced in other cases far more widely open for drainage, brings home to one very forcibly that the whole question is one of degree.

The factors concerned are: (1) virulence of infection and (2) resistance to infection, and the sum of these is expressed by the clinical picture presented by the joint, and the patient's general condition. The bacteriologist can throw some light on the first factor, for it is agreed that streptococcal infections are the most serious, especially *Streptococcus longus*, other coccal infections producing far less serious symptoms. This rule is by no means absolute, however, as a streptococcal infection may sometimes be found to respond to conservative measures. The presence of a mixed infection does not make any material difference to the prognosis. He can give welcome information, too, by reporting

that organisms are scanty and mainly intracellular; but further than this the laboratory cannot help us, for the most virulent streptococcus, and the most attenuated will always be alike in smear and culture.

The individual resistance to infection is variable and uncertain. Probably increasing age sees a diminution, and the presence of other disease or septic wounds elsewhere will certainly react unfavourably upon it.

But it is to the sum of the two factors, as evidenced by the pulse and temperature chart, and the patient's general condition, that attention must be given. For it is this, the whole clinical picture presented by the patient and his wound, that tells whether the particular method of drainage employed is sufficing.

The methods that have been recommended are very varied, but may be tabulated as follows, passing from the most conservative to the most radical.

(1) Intermittent drainage, *i.e.*, repeated aspirations with or without lavage, or injection of some such antiseptic as 2% formalin-glycerine, ether, or iodoform in ethereal solution.
(2) Jaboulay's arthrotomy—an incision into the supra-patellar bursa with elevation of the whole leg.
(3) The usual arthrotomy by two para-patellar incisions.
(4) Ollier's method, in which two free antero-lateral incisions, extending from the joint level to the upper limit of the supra-patellar pouch and following the lateral line of reflexion of the synovial membrane, and two postero-lateral incisions, one in front of the biceps and the other between the *sartorius* and *semimembranosus*, are made. Between these incisions are passed two tubes from before back, so as to lie between the lateral ligaments and the bone. To this he adds an incision through the popliteal space into the post-condyloid recess, if necessary.
(5) In this method antero-lateral incisions at the level of the synovial reflexion are made, as in Ollier's method. From the lower end these incisions are carried backwards, so as to divide freely the lateral ligaments and tendon of the *popliteus*.
(6) Transverse incision with division of *ligamentum patellae* and its fatty pad. This is usually accompanied by incision as in (3), thus turning up a flap containing the patella.
(7) A flap as just described, with complete divisions of both lateral ligaments to the level of the most posterior part of the joint. This is followed by excision of the semi-lunar cartilages, and sometimes by division of the crucial ligaments. The joint is kept in the flexed position until the acuteness of the sepsis has subsided.
(8) Excision of the joint.

Of the first method I have a very limited experience only. One case of my own in which the infection was a very mild one (*Staphylococcus aureus* and a Gram-negative bacillus), was treated in this way with very fair results. A report upon the patient's condition about three months later stated that flexion to 45° was possible, and that he could walk two miles. Another patient with mild streptococcal infection, was evacuated with a perfectly quiet knee, but considerable peri-articular thickening after three or four treatments by aspiration and lavage (C.S.B.). A few men have passed through here who have been treated in this way at casualty clearing stations, and appear to be on the way to recovery with a more or less movable knee. Probably but a very small percentage of infected joints can safely be treated throughout by this method.

The second and third methods may be classed together. All that can be hoped for from either is a simple reduction of tension in a distended joint. The anterior compartment will be drained without doubt, but it is only the overflow from the posterior which can escape. If the infection be very mild, the joint may gradually quieten down and recover with or without a fibrous ankylosis, but with a virulent infection the patient's condition will rapidly grow worse, and more radical measures quickly become necessary.

Of intermediate grade are the cases in which one or more collections of pus, which have made their way from the posterior part of the joint, are from time to time evacuated in the calf, popliteal space or thigh. Some of these patients recover after a long suppuration, others after a timely amputation, others again die of septicæmia, amputation having been too long deferred.

The fourth method, Ollier's incisions, while more thorough than the last, and to some extent dealing with the posterior pouches, can never, in my opinion, sufficiently drain a severely infected joint. Its superiority lies in the fact that it anticipates the formation of posterior collections, and thus prevents tracking into leg or thigh.

The plan of treatment of the fifth method, apparently mutilating in the extreme, is of considerable value. The division of the lateral ligaments ensures a far more efficient drainage than the antero-posterior tubes of Ollier. When it is considered that the end result of the severe cases in which it is adopted, is an ankylosis, the loss of the lateral supports of the knee-joint is seen to be of little importance. Through such incisions Carrel's tubes can be passed across the front of the joint and behind the condyles in such a way as to ensure an absence of pus tension and a mechanical cleansing.

The sixth method, as far as drainage is concerned, has very little advantage over the second method. It is equally useless in draining the posterior pouches, and is only apparently more thorough.

The great superiority of the seventh method in any very severe infection lies in the fact that the whole joint cavity is opened, and recesses either done away with or made freely accessible to drainage. The excision of the semi-lunar cartilages removes two pockets which otherwise are quite beyond reach. While they are still *in situ*, pus must accumulate under their free edges. The retention of the

crucial ligaments is not open to this objection. Together with their covering of synovial membrane, they form a "watershed" which simply runs back on each side from the mid-joint to the posterior ligament. Division of the crucials, no doubt, enables the articular surfaces to be further separated when the leg is in extension, but when the knee is flexed, the surfaces are found to be quite sufficiently separated without crucial section if the lateral ligaments have been thoroughly divided. Moreover, by keeping the crucials intact the leg is less flail-like and consequently easier to deal with in subsequent dressings.

The eighth method, excision of the joint, is here considered as an operation of drainage in a severely infected joint, and not as one necessitated by the extent of bony injury. There can be no doubt that excision does constitute an operation of drainage, here as in every other joint, in spite of the contrary views held by such an authority as Leriche. To the fact that he has not used Carrel's treatment in his cases may perhaps be attributed his general condemnation of the method in the knee. Moreover, he appears to regard with disfavour any separation of the bone surfaces after excision, and close apposition is, in the early stages, by no means desirable. While I have not employed excision in arthritis without bone injury, the results of the operation in infected joints *plus* bone injury are quite convincing as to its efficacy in securing drainage.

vide lateral drainage as in the fifth method. This is sufficiently illustrated by the following case, in which the fate of the semi-lunars is interesting. (Chart 2).

Case XI.—Pte. J.G. was admitted on December 29, 1916, six days after operation at the casualty clearing station. There had been a wound of entry to the outer side of the supra-patellar pouch. The foreign body had been removed through another incision higher up. The rectus expansion had been split, apparently to give access to the pouch, and had been sutured again. Pus from all wounds contained streptococci. The temperature was 39.6° C., and the pulse-rate 88. The stitches were removed and all the wounds drained by tubes. The joint was opened along the inner side and washed out, and left open with a light packing, in the hope of confining the infection to the supra-patellar pouch.

January 11, 1917. Pus was present in tissues outside the internal lateral ligament. An incision was carried down here over the joint line, but not dividing the ligament. A small outer lateral pouch incision was made. Carrel's tubes were inserted across the front of the joint, etc., and Chutro extension was applied above the *os calcis*.

January 15, 1917. Division of the internal lateral ligament was performed, and Carrel's tubes were inserted behind the condyle.

January 19, 1917. The external incision was much enlarged. During movement of the joint the external semi-lunar cartilage was extruded whole.

January 27, 1917. The internal semi-lunar cartilage was removed. It was quite loose, except where it blended with the lateral ligament. Carrel's tube was put into the focus of pus behind the internal condyle. The Chutro extension was taken off and a crab splint applied.

February 17, 1917. Carrel's tubes were retained in the superficial wounds only.

February 23, 1917. The patient was discharged with his

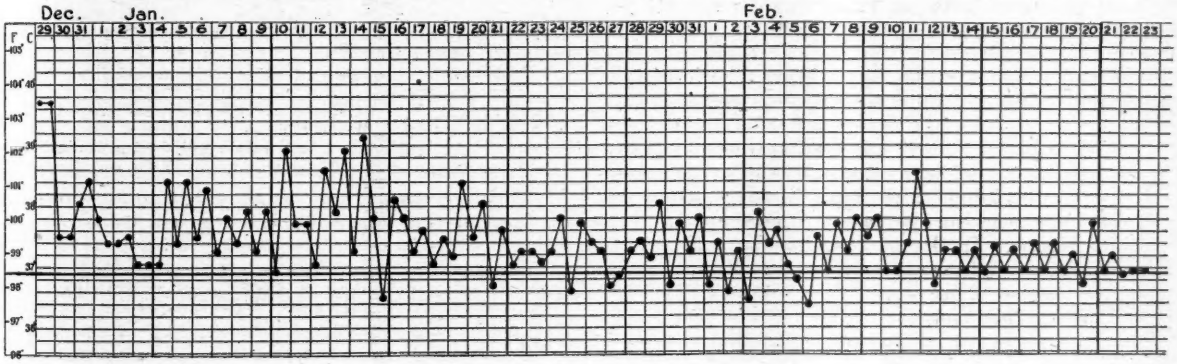

Chart II.

Method to be Employed.

Whilst the most severe infections naturally demand the most radical measures, it must not be inferred that every case in which the joint is definitely infected, will necessarily need operation on the lines of the seventh or eighth methods.

An example has already been given (Pte. G.H.G.) of a mild infection treated by what is practically the third method, Carrel's tubes being used in addition. When local and constitutional symptoms are slight, this will be the first step to be taken—provision of lateral drainage by one or both para-patellar incisions. The mechanical flushing out and the sterilizing effect of the Dakin solution act as an important auxiliary treatment.

If progress is unsatisfactory, but the condition not really very urgent, my custom has been to pro-

knee nearly healed. I heard from him a month later; he was not up, but was doing well.

Throughout the treatment of such a case a constant watch must be kept upon the popliteal space for any fullness or bogginess, indicating a collection outside the joint, which may quite possibly occur. Provided, however, it is detected and drained early, it does not by any means imply that the leg is beyond hope. As long as the general condition of the patient is not deteriorating and he sleeps, eats and suffers little pain, the prospect is still good. When, on the other hand, after a few days of drainage by the fifth method, the pulse-rate and general progress are unsatisfactory, operation, as in the seventh method, will probably be necessary, and must not be delayed until pus has broken out through the joint behind.

Opinion and practice in different centres of war surgery differ strongly as to he means to be employed in dealing with the severe infections. While some workers are satisfied with drainage of the Ollier (method 4) type, others, particularly in a large northern centre, generally favour excision. In this area, on the other hand, an operation on the lines of the seventh method is a good deal employed in severe infections.

If it may be assumed that a method employing incisions alone is sufficient to cure most cases of sepsis, however acute, this is the method to use as being the simplest and best. Such has not been my belief, but I have been much impressed by the results published lately in the *Lancet* by Campbell and Wolfenden and intend to make a trial of their methods.

The case for excision as against the wide arthrotomy lies in the fact that the leg is straight throughout, and thus is more conveniently handled. Against it is the fact that there are freshly cut bone surfaces open to infection when it is most acute. This entails not only an added surface for absorption, but exposure of the bone cells upon which union will depend, to the risk of infection. It is difficult to tell if this fear of non-union is well grounded or not, as published reports of this method are indefinite as to the nature of the ultimate union, owing to the need for evacuation to England. I have been shown one or two cases certainly in which bony union was present, but it would seem, for the reason advanced above, that it may not always be so. On the other hand, in method 7 the cartilage constitutes a covering and protection for a fortnight or more while the acuteness of the infection is subsiding.

Of the cases which we have treated here by transverse opening and flexion, only five have been kept longer than a month after straightening. Of these, three were evacuated with firm union, but not certainly bony, as it was not checked by a skiagram. Another had only "some union," and of the fifth no note was made of the condition. Reply cards, when received, are usually silent as to the nature of union, as they are sent back too soon. In one case, however, a card received five months after evacuation speaks of "firm union and walking well." I have word from one man himself that he is going about his farm in Canada on a satisfactory stiff leg, so the ankylosis is a firm, and probably bony one.

I give the following case in detail, as it was, perhaps, the most acute arthritis I have yet seen, and yet the patient's leg was saved. Slight injury to bone was present, but for the purpose of illustration this may be neglected.

Case XII.—Pte. H.M. was wounded on April 14, 1917, by a piece of shell in the left knee. He pulled out the fragment himself, opening the joint to the inner side of the patellar ligament.

On admission on April 16, 1917, the temperature was 39.2° C. and the pulse-rate 136 (Chart 3). He was in great pain. The whole joint was swollen, tender and painful, with redness around the wound. An operation was undertaken at once. The wound had been excised at the casualty clearing station, so it was extended downwards to expose the tibial margin, and upwards to make the para-patellar incision. Fibrin was present in the turbid fluid throughout the front of the joint. A small damaged area of the tibial margin was removed with the gouge, and the adjacent part of the semilunar cartilage excised, as it was torn. Carrel's tubes were now passed across the joint and into the supra-patellar pouch, and the leg put upon a Thomas's splint with extension.

April 23, 1917. Examination of the fibrin masses showed numerous chains of *Streptococcus longus*. He had had much pain and was doing badly. A transverse arthrotomy was performed, with flexion of the knee and turning back of patella flap, etc. Carrel's tubes were inserted.

May 19, 1917. Cartilage was removed from the tibial and femoral surfaces and the knee straightened. Carrel's tubes were left behind the condyles still. The popliteal space was quite flat.

June 1, 1917. The patella was removed and the flap brought down and sutured over the Carrel's tubes.

This operation, comparatively slight though it is, was in this case followed by severe shock. The chart shows the high pulse-rate which persisted for several days, during which a profound septic anæmia developed. The knee became very swollen and œdematous. In fact it was very evident that with such a virulent infection this plastic operation was premature.

June 15, 1917. The swelling was subsiding and the appetite improving again.

June 22, 1917. A few drops of pus were evacuated from in front of the head of the tibia.

July 12, 1917. Carrel's tubes were applied to granulating surface of wound alone. There was union of the soft tissues only.

July 25, 1917. Temperature had not been above 37.2° for the past fortnight. The patient was very well and fat. The union was slightly firmer. He was evacuated. I have recently learned that this patient is beginning to discard his stick for walking. A skiagram shows undoubted bony union.

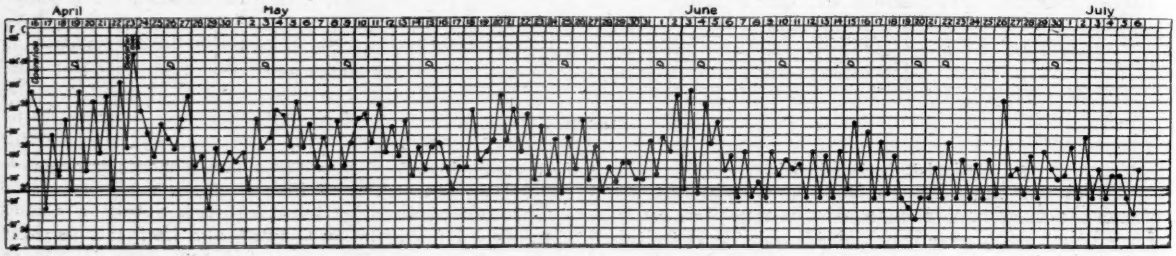

Chart III.—D = Dressing and changing of Carrel's Tubes.

In the appended chart the swinging temperature and rapid pulse of the first week will be seen to be followed by an immediate drop in the temperature and to a lesser degree in the pulse-rate following the arthrotomy. The flare up after the operation of June 1, 1917, is seen with its gradual subsidence. It was several weeks before the acute septic anæmia

finally disappeared and flesh was again put on. After July 5, 1917, the temperature curve is not given, as it rose to 37.7° on one occasion only.

I find it hard to believe that any method short of transverse arthrotomy and flexion could have saved the leg, or that an excision would have been at all a safe procedure, for reasons given earlier.

The operation is carried out as follows:—

With the knee flexed, a transverse skin incision is made, starting on the inner side about 2 cm. above the joint line from just in front of the sartorius tendon to a similar point in front of the tendon of the biceps. The joint is opened by dividing all the ligaments right across to a similar extent. The internal saphenous vein is spared, if seen. If parapatellar incisions have not been made earlier in the history of the case, these are made now, the lateral synovial reflexions being opened as far back as possible. With the knee in full flexion as for an excision, the pad of fat and *ligamentum mucosum* are excised, and then both the menisci are removed with scissors and scalpel. If the lateral ligaments have been sufficiently divided and an assistant suitably manipulates the leg, abducting and adducting it as required, this is not difficult. The tendon of the *popliteus* will be divided at this stage, if it has escaped earlier.

The bursal prolongation around this tendon is investigated as regards the presence of pus or turbid fluid, and any communication of the joint with the bursæ under the heads of the *gastrocnemius* is noted. It will now be found that with the joint in flexion to 75° or 80° a finger can be passed freely from each end of the incision into the pouches behind the femoral condyles as far as the mass of the crucial ligaments in the intercondyloid notch. The tourniquet is now removed, very careful hæmostasis secured, and the joint thoroughly irrigated.

If the posterior joint compartment has contained much pus, a 3.75 cm. long fenestrated drainage tube is passed behind each femoral condyle. The tubes lie horizontally and assure a perfect drainage. If the infection has been less marked here these may be omitted.

The splint used is the Jones's "crab" splint, bent to an angle of 75° and plentifully padded, especially behind the knee. It should reach nearly to the buttock fold after flexion. Over the mid portion a large prepared dressing or *pansement*, as devised by Chutro, is laid. This is in effect a Gamgee tissue, made with an outer layer of non-absorbent and an inner layer of absorbent wool, cut to shape, provided with tapes and sterilized. This is a convenient dressing, especially in the later stages. Carrel's tubes are now passed behind the condyles and an open-ended tube is placed alongside the divided tendon of the *popliteus*, within its synovial sheath, if this has contained pus. Others are laid on the femoral condyles, across the front of the tibial head, and on the synovial membrane of the supra-patellar pouch. If the infection has been very acute the patella flap is allowed to remain turned up on the front of the thigh; if less acute it may be allowed to drop back over two or more Carrel's tubes. A wet eusol gauze dressing is applied around the tubes, which may number six to eight, and the tapes of the *pansement* tied, thus keeping all in place. The splint and bandages are then put on over all. When the patient is in the ward the splint is slung from a Balkan support, so that the lower leg is horizontal. This is a comfortable position, and I think minimizes the chances of infection spreading along the *popliteus* tendon. The usual two-hourly Carrel treatment is then started, a total of 60 to 90 c.cm. being run into the tubes at each instillation.

After treatment. If the pulse and temperature show an improvement, and no oozing occurs which necessitates redressing on the following day, I am inclined to defer this for two or three days. An anæsthetic is then given and fresh dressings and tubes applied, as at the time of operation. In fact an anæsthetic is usually found to be time-saving for dressings in the earlier progress of the case. Without it the removal of the gauze and the changing of the Carrel's tubes are tedious and somewhat painful. I believe that the less frequently the case is dressed the better, due regard being paid to the state of the pulse and temperature, amount of discharge, comfort or otherwise of the patient, and the general condition of the joint as revealed at the last dressing. I suspect very strongly that in such cases as these, where sepsis is well established, the value of Carrel's treatment may lie as much in its mechanical cleansing of the wound surfaces a dozen times a day, as in the bactericidal power it possesses.

One cannot but be struck by the remarkable way in which, as a result of the flushing out and dilution of the toxins, extensive suppurating wounds in any part of the body are supported without the evidence of toxæmia that one would expect.

However much care may be exercised in the dressing, this always entails some laceration of granulation tissue and general movement of the parts, which is very often reflected in the temperature chart. Between the first few dressings three days is an average interval; later this may be increased to five or six days with nothing but advantage. (See Chart 3.) At the end of a period varying from ten days to three weeks, during which the flexed position is maintained, it will be found that the articular cartilage has become darker in colour and can be readily pulled off with forceps, leaving a granular red bone surface beneath. Either at the same sitting or a little later the leg is straightened somewhat. Contracture of the hamstrung muscles rarely offers any resistance, but if the leg is completely extended at once, more reaction is provoked than if it is done gradually, with intervals of a few days. It is as well to retain the Carrel's tubes behind the condyles for a few days longer, and when they are removed a glove finger drain replaces them for a time. When the leg is straight an ordinary back splint with foot piece is the best, but if a collection of pus should have been opened behind, a Thomas's knee splint is used. Two patients have suffered from night starts when the leg was first straightened, but a little extension, merely sufficient to steady it, quickly relieved this. Any tendency to "in-knee" should be met with by suitably bandaging to the rods of the Thomas's splint.

The leg having been straightened, attention is given to the patellar flap as soon as possible. The patella is excised and the skin and aponeurosis brought down as close to the lower margin of the original transverse incision as possible. Even after mobilization of both the parts in question there is certain to be some tension from retraction in the flap. This should be guarded against by suture buttons of some kind. I have found that by not removing the patella at the first operation this retraction is much lessened. It is advisable to remove it now, however, as by doing so the flap is more plastic and can be brought down further to the lower skin margin.

At each dressing throughout the treatment the popliteal space is examined for any fullness or œdema, which would indicate a possible collection of pus. Even with this full opening of the joint there is no complete immunity from collections of pus, and if the chart is not satisfactory, such a cause may be found to be responsible. Attention to detail in the placing of the tubes in the wound, and personal attention generally in the after treatment count for even more than the operation in bringing the case to a successful issue. If a collection of pus is found and opened, one or more Carrel's tubes are placed in the cavity and suitable drainage provided by rubber tube or glove finger, if in the neighbourhood of the vessels. Without doubt the after treatment is tedious, but I believe that in this way one can save legs that would otherwise need amputation.

(To be Continued.)

Reports of Cases.

INTESTINAL OBSTRUCTION FROM A LARGE GALL-STONE IN THE ILEUM.[1]

By **Archie Aspinall, M.B., Ch.M. (Syd.),**
Honorary Assistant Surgeon, Sydney Hospital.

Mrs. C. H., married woman, aged 61 years, with six children, was admitted to the Sydney Hospital on March 19, 1918, with a note from Dr. Curtis, of Waverley, to the effect that "the trouble is old gall bladder disease, and now vomiting set in, and I am afraid intestinal blocking. Some friends had given her morphia." On admission the temperature was 35.5° C., the pulse-rate 80 and the respirations 20. The bowels had not been opened for four days. She had had persistent vomiting for the last three days. The character of the vomit had been the same throughout, *viz.*, greenish brown colour, of fæculent odour. The patient was cold, and collapsed, and was vomiting constantly. The abdomen was slightly distended. There was general tenderness on palpation. No definite rigidity was detected. There was no jaundice.

Previous history. She had had repeated attacks of gall stone colic during the last nine years, but during the past twelve months "could scarcely eat a meal without vomiting."

The patient was seen by Dr. Cyril Corlette, who confirmed the diagnosis of intestinal obstruction, and recommended immediate surgical interference.

Dr. Perry administered ether by the open method. I thought the condition might be due to adhesions, and made a right rectus incision with the umbilicus at the level of the middle of the incision. When the abdomen was opened the small intestine was seen to be distended, and on passing the hand up in the region of the gall bladder no marked adhesions were felt, although the gall bladder felt hard and suggested the presence of gall stones. I next passed my hand into the pelvis and felt in left iliac region a hard body in the bowel; on bringing this portion of the bowel into the wound the bowel was seen to be somewhat collapsed below. I recognized the mass as a large gall stone in the ileum about 120 cm. above the ileo-caecal valve, and was able to move the stone down for about 60 cm. Then the bowel contracted on it firmly. The bowel was incised and the stone removed and the opening in the bowel being closed by two layers of sutures, the inner one of catgut and the outer one of fine silk. At the site of the stone a marked ring of contraction was evident; before the abdomen was closed this contraction had passed off. I came to the conclusion that the blocking of the bowel was due to spasm from irritation of the stone rather than from mechanical obstruction.

After closing the abdomen, I passed a stomach tube and washed out a large quantity of fæcal smelling fluid from the stomach. The patient was returned to bed and placed in the Fowler position, Murphy's "saline drip" was ordered.

March 20, 1918. Calomel (0.6 grm.) was given every hour for four doses and was followed by enemata of saline solution. The abdomen was distended. The temperature was subnormal and the pulse-rate 90. The extremities were cold. There was no vomiting.

March 21, 1918. There was regurgitant vomiting. A high enema was administered without result. There was marked abdominal distention. The temperature was 37.3° C., and the pulse-rate was 104.

March 22, 1918. The bowels acted after an enema and a hypodermic injection of pituitrin had been given. The distention was less marked. There was still slight vomiting.

April 7, 1918. The wound had healed by first intention. The patient was allowed to go home.

Throughout the temperature had been subnormal, except on March 21, 1918. The pulse was never rapid, but there had been marked collapse and coldness of the extremities.

The calculus weighed 13.8 grm.; its length was 36 mm., its diameter 26 mm. and its circumference 85 mm.

According to Mayo Robson, the causes of obstruction of the intestine could be divided into the following four groups:—

(*i.*) Mechanical obstruction.

(*ii.*) Local acute peritonitis around the gall bladder, giving rise to paralysis of the bowel in its neighbourhood. In this form recovery follows without operation.

(*iii.*) Vovulus of the small intestine, due to:—

- (*a*) intensity of nervous disturbance during acute biliary colic;
- (*b*) excessive peristalsis accompanying the passage of a calculus along the intestine. This form is closely related to mechanical obstruction.

(*iv.*) Late results of cholelithiasis, due to strangulation by adhesions or bands.

Gall-stone ileus produces colicky pain, nausea, vomiting and meteorism. The stones are usually impacted in the ileo-caecal valve. It has been recorded that a stone measuring 9.5 cm. in its largest diameter has passed without causing any symptoms of intestinal obstruction.

At times the calculus gives rise to a fistulous connexion between the gall-bladder and the duodenum, and occasionally between the gall-bladder and the colon. In exceptional circumstances the stone has been retained in the colon and in the upper and middle portion of the ileum. Stones which become impacted in the intestine, are not necessarily of large size. Israel reported a case of obstruction caused by a stone measuring 2 cm. in its greatest diameter. Gall-stones irritate the intestinal wall and reflexly cause local muscular contraction.

Obstruction in the lowest part of the duodenum or in the first part of the jejunum produces the characteristic symptoms of occlusion of the duodenum, *viz.*, profuse vomiting of bilious material.

At the London Hospital, during a course of eight years, there were 360 cases of intestinal obstruction. Of these, eight, or one in 45, were due to gall-stones. The mortality is given at 50%. Death usually takes place in from five to ten days. The latest date of death recorded is the fifteenth day.

[1] Read at a meeting of the New South Wales Branch of the British Medical Association, on May 10, 1918.

RESTORATION OF SUPINATION BY VERRALL'S SPLINT.[1]

By H. S. Stacy, M.D. (Syd.),
Sydney.

S.R.S., *aet.* 47, had a gunshot wound of the right forearm, fracturing both the radius and ulna about the middle. A piece of the radius was removed two weeks later. An internal angular splint was applied for three months; this was removed on the boat coming to Australia, and massage was applied. The masseur attempted to supinate the forearm, but owing to the pain desisted.

When I saw him on November 24, 1917, he had been discharged from the Army, with his forearm almost completely pronated and with great pain over the fifth metacarpophalangeal joint. It was impossible to supinate the forearm more than a small extent. I decided to apply Verrall's splint, which consists of a plaster casing enveloping the lower half of the upper arm and the upper half of the forearm, in one piece; in the other, the lower half of the forearm down to the palm (leaving the thumb free), is enveloped. Along the radial and ulnar borders of each casing a piece of metal 2 cm. wide and 8.75 cm. long, 7.5 cm. of which is turned up at right angles, is incorporated, making four in all. The vertical turned-up portions project at the edges of the casing, the horizontal portions being serrated, in order to fix them to the plaster bandages better. The limb, before the application of the plaster, is enveloped in felt or cotton wool, care being taken to pad well the lower end of the radius in front and the lower end of the ulna behind. In 24 hours the pieces of the metal are partly approximated by rubber tubing, radial to radial, ulnar to ulnar. They may be tightened every few days. When supination is complete, it is left on for three weeks longer. This man's supination is now almost completely restored, the treatment having taken two months

The patient found it painful for the first week. He lost all his pain in the palm, and recovered his hand-grip, which previously was very feeble. He is now rejoining the Army, and hopes to go abroad soon. The mal-position in his case was partly due to contracture of the soft parts around the site of fracture and partly to the contraction of the capsules of the radio-ulnar joints as a result of long immobilization in that extremely faulty splint, the internal angular. All orthopædic surgeons are agreed that the fully supine position is the only way to put up gunshot wounds of the arm or forearm.

There is one objection that may be urged against this splint, that it prevents massage being applied, but the apparatus mostly used at present for the movements of pronation and supination are lacking in this respect, *viz.*, the fixation of the arm, so as to prevent movement at the elbow and the shoulder joints. Major Hall Edwards, in a recent issue of the *Archives of Roentgenology and Electrotherapy*, illustrates a machine in which this objection is overcome, but until this is installed in Australia, I would recommend Verrall's splint for all these cases, and I doubt if anything will ever altogether displace it.

Verrall is on the staff of the Orthopædic Hospital at Hammersmith, where there is an abundance of cases, similar to this. His idea has been adopted by all his colleagues.

A CASE OF SPLENOMEGALIC POLYCYTHÆMIA.[2]

By Harold J. Ritchie, M.B., Ch.M. (Syd.),
Honorary Assistant Physician, Sydney Hospital.

The patient I am showing is a woman, aged 58 years, who was admitted to the Sydney Hospital on February 26, 1918. She was a single woman, and had lived in Sydney all her life. Menstruation had begun at the age of 14, and had been regular. Each period lasted for seven days. The menopause occurred at the age of 46. The patient denied having had any specific or Neisserian infection. She had had measles and scarlet fever in childhood. Some 30 years before she had suffered from fainting attacks and "a dilated heart."

As far as the patient was aware, a condition similar to that from which she was suffering had not occurred in any member of her family. Her father had died at the age of 80 from heart failure, and her mother at the age of 64 from a "stroke." She had one brother and three sisters, who enjoyed good health.

The patient stated that she had always had the same florid appearance noted at the time of admission, although she was originally considerably fatter. Three weeks before entering the hospital she had noticed a "blister" on the right leg, near the ankle, which, though painless, gradually became larger, and refused to heal. She applied at the hospital for treatment of this ulcer.

She had never had any bleeding from the nose or mouth. She stated that at times she felt her heart beating very forcibly, and that she could not sleep on her left side. Occasionally she had pains along the costal margin.

The following signs were noted on examination: The patient was florid, the nose and ears were bluish. She had grey hair. Her lips, tongue and buccal mucous membrane were of a deep purple-red colour. The sclerotics had a reddish tinge, and contained dilated capillaries. Her hands and feet were red, and finger-tips and toes purple, which contrasted with the white nails. On the legs were scattered patches of cyanosis, especially on the front of the ankle. On the lower third of the right leg was a dark, bluish, pigmented ulcer, with indurated edges and a flat base filled with a black eschar. There were no varicosities of the superficial veins.

The appetite was good, and there were no subjective symptoms of the disturbance of the alimentary system. The patient stated that the bowels were generally loose, and that there was no vomiting. There was a marked bulging of the left lower ribs and of the upper hypochrondriac regions. The lower border of the spleen was readily felt 5 cm. below the costal margin. The splenic dulness merged into the cardiac dulness. The lower border of the liver extended to 2.5 cm. below the costal margin. The upper border was normally situated.

The limits of the cardiac dulness could not be definitely ascertained. The apex beat was not palpable, but the sounds were heard most loudly 2.5 cm. below the nipple in the sixth inter-space, and 1.25 cm. outside the mid-clavicular line. The first sound was prolonged and indistinct. The second sound was accentuated in the aortic area, and, to a less degree, in the pulmonary area. There were no added sounds, and no irregularity of rhythm. The radial artery was just palpable. The volume of the pulse was full and bounding, the tension moderate, the rhythm regular and the rate 80 per minute. The systolic blood pressure was 145 mm. Hg..

The specific gravity of the urine was 1,026, the reaction was acid; it contained albumin, red blood cells, pus cells, and a few granular casts, but no sugar.

A Bordet test carried out by Dr. Finckh was negative. The blood showed a marked increase of coagulability, and was of a very deep red colour. Great difficulty was experienced in aspirating sufficient blood for the Bordet test, so crowded was it with cells, and so quickly did it coagulate. A blood count was made, with the following results:—

Red blood corpuscles	12,000,000
Leucocytes	5,000
Hæmoglobin	120
Colour index	0.4
Differential count—	
Polymorphonuclear cells	82%
Large lymphocytes	8%
Small lymphocytes	5%
Eosinophile cells	5%

During the first fortnight after admission no progress in the healing of the ulcer was made. She was given 1.8 gm. of citrate of potash every two hours; but this had apparently no effect on the rate of coagulation. From March 5, 1918, from 300 to 600 c.cm. of blood were withdrawn each week from the basilic veins. Up to the present time this has been done six times. The ulcer began to heal immediately, and is now completely healed and covered with new skin. After each venesection her colour improved for three or four days. A soft, blowing, systolic murmur developed

[1] Read at a Meeting of the New South Wales Branch of the British Medical Association on May 10, 1918.
[2] Read at a Meeting of the New South Wales Branch of the British Medical Association on May 10, 1918.

during this period. It was best heard in the aortic area. The blood pressure is now 140 mm. Hg., and the urine contains a few granular casts, pus cells and red cells, but no albumin. The last blood count revealed the following condition:—

Red blood corpuscles	12,850,000
Leucocytes	4,500
Hæmoglobin	165%
Colour index	0.6

There is some poikilocytosis.

Differential count—

Polymorphonuclear cells	72%
Small lymphocytes	24%
Large lymphocytes	0%
Transitional cells	0%
Eosinophile cells	4%

The diagnosis of the condition is obviously a *polycythaemia vera*, with splenic enlargement.

A CASE OF HARLEQUIN FŒTUS.[1]

By **W. F. Litchfield, M.B. (Syd.),**
Honorary Assistant Physician, Royal Alexandra Hospital for Children, Sydney; Honorary Assistant Pathologist, Royal Prince Alfred Hospital, Sydney.

The patient I am showing to-night is a girl, aged eight years. I first saw her eight years ago, when she was two days old. She was a full-grown infant, but was encased from head to foot in a greatly thickened epidermis which was cracked and seamed in many directions, but chiefly at the natural folds and wrinkles of the surface. The appearance was of the surface of the body being covered with a number of thick hard plates of skin, the edges of which were curling up, and the natural elasticity of the skin was nowhere apparent. I recognized the condition to be that described as "harlequin fœtus," and gave a bad prognosis. However, she was carefully nursed, and here she is to-day. The treatment consisted of careful cleanliness and anointing the skin with white vaseline and lanolin. To-day the skin is hard and dry, and scaling universally. There is a severe form of ectropion of the lower lids. The child is mentally bright and in a fair state of health.

Hebra thought that the thickening of the surface of the body in harlequin fœtus was due to excess of hardened sebaceous secretion, but it is now generally recognized by dermatologists to be congenital, or, to be more correct, early and severe ichthyosis. This case supports that contention, for her condition now is one of severe ichthyosis. Congenital ichthyosis or harlequin fœtus is a rare condition, and most of the patients survive but a few days. The patient exhibited to-night must, therefore, be somewhat of a rarity.

CONGENITAL RADIO-ULNAR SYNOSTOSIS.[2]

By **J. G. Edwards, M.B., Ch.M. (Syd.),**
Honorary Assistant Radiographer, Sydney Hospital; Honorary Radiographer, St. Vincent's Hospital, Sydney.

Congenital radio-ulnar synostosis is an extremely rare deformity.

In the *British Journal of Surgery* (1913-14, Vol. I., p. 366), Dr. Wilkie published an article describing three cases of this deformity, and stated that only forty cases had been reported in medical literature. Three further cases were reported by George F. Thomas in the *American Journal of Roentgenology* (November, 1917), bringing the total to forty-six cases.

The present case occurred in a boy, aged two years and four months; he was born at full term, after an uneventful pregnancy and confinement.

The mother noticed no abnormality until the boy was two years old, and then she found that he did not use his left arm as well as his right, and that the left arm was smaller than the right. There was no family history of any similar deformity.

Measurements show a difference in circumference in the upper third of the forearm of 2 cm., and measurement from the lateral condyle of the humerus to the styloid process of the radius shows that the left forearm is 1.5 cm. shorter than the right.

The difference in circumference is largely due to absence or non-development of the pronators and supinators.

Pronation and supination are entirely absent, the forearm being fixed in pronation.

Extension and flexion are not interfered with, and the patient can place articles in his mouth by flexing his elbow and dorsiflexing his wrist. The movements at the wrist are much freer than usual.

The radiograms show absence of development of the upper end of the radius and fusion with the upper portion of the ulna, the fusion of the two bones extends for several centimetres down the shaft of the ulna.

The lower ends of the humerus, radius and ulna are normal.

Another form of this deformity is described, and in it the upper end of the radius articulates with the humerus, but there is fusion of the radius and ulna in their upper parts.

Reviews.

THE CARREL METHOD.

It is needless to say that a book on the "Technic of the Carrel Method," by Dumas and Anne Carrel,[1] will command wide-spread interest, not only by the intimate association the authors have had with the treatment, but also by the world-wide adoption of the method for septic wounds, whether of gun-shot or other origin. As the treatment is comparatively new, the authors have been wise to give the steps of the technique in simple language and in full. There is no excuse for anyone, whether he be surgeon, student or nurse, after he has read this book, from failing to carry out the steps of the Carrel treatment, exactly as M. Carrel and his assistants perform them at Compiegne.

Stress is laid in the appendix upon the exact strength of the hypochlorite solution and upon the necessity of testing the chlorine content of the variable commercial chloride of lime. In this country it is doubtful if this is always realized; so, for these additional reasons, it should command attention.

[1] Read at a Meeting of the New South Wales Branch of the British Medical Association on May 10, 1918.

[2] Read at a Meeting of the New South Wales Branch of the British Medical Association on May 10, 1918.

[1] Technic of the Irrigation Treatment of Wounds by the Carrel Method, by J. Dumas and Anne Carrel; Authorised Translation by Adrian V. S. Lambert, M.D., with an Introduction by W. W. Keen, M.D., LL.D., F.R.C.S.; 1917. New York: Paul B. Hoeber. Crown 8vo., pp. 90, illustrated. Price, $1.25.

The Medical Journal of Australia.

SATURDAY, JUNE 15, 1918.

Now—or Later.

The determination of the Defence Department to allow medical students in their first, second and third years to enlist in the combatant forces has impelled the Dean of the Faculty of Medicine of the University of Sydney to publish a protest in the daily press. This considered expression of opinion, as was to be expected, led to counterblasts, both in the public press and outside it, and at the present moment there is a distinct agitation in university circles against what is spoken of as the privilege of the medical profession in its connexion with the war. It is urged by some that, while men trained in other sciences are required to enlist as privates in the combatant ranks, and the students undergoing training in these branches are not kept back until they are qualified, undue consideration is shown to medical practitioners and medical students. This consideration is said to constitute a distinct privilege. A further argument in favour of the enlistment of first, second and third year medical students is that the need for combatants is so great at the present moment, and the result of voluntary enlistment so uncertain, that the ranks should be filled with these younger students, notwithstanding any difficulties which may arise from this action in future years.

It is unfortunate that there should be any need to make comparisons between the rôle in national affairs of medical practitioners and that of other men trained in the various departments of our universities. The importance of skilled engineers, physicists, chemists, schoolmasters, lawyers and members of other learned professions to the nation is admitted on all sides. The primary difference between the members of these professions and those of the medical profession is that the drain on the supply during war is far greater among medical practitioners. Australia has already supplied over one thousand medical practitioners for war duty. The Army must have a liberal supply of surgeons for the advanced aid posts, for the casualty clearing stations, for the base hospitals, for the general and special hospitals in France and England, for transports and for the work to be carried out in Australia. The nature of the work required of an Army surgeon is peculiar. There is a personal responsibility which renders it necessary that those bearing it should hold superior rank. The Army surgeon must be served by subordinate soldiers, if he is to perform his duties efficiently and to advantage to his soldier patients. This necessitates the granting of a commission to the medical officers of the Army Medical Corps. In England the medical man joins as a lieutenant; in Australia he joins as a captain. Under a voluntary system there is much to support the Australian method. It will be seen that the granting of commissions is not a matter of privilege to the members of the medical profession. It is a necessity of the service, and since the increased rank is accompanied by immeasurably increased responsibility, it is doubtful whether the fact constitutes an advantage to the individual.

The problem of the student may be regarded from the point of view of the individual and his duty to his country, or from the point of view of the nation and its relations to the medical profession. The military authorities need at the present time a hundred medical practitioners of a special type. No one knows better than the Deans of the Faculties of Medicine of our three large universities how difficult it has been in the past to meet the requirements of the military authorities for suitable medical officers to serve at the front. With this experience, it would be suicidal to meet the present requirements without any provision for the future. There is no question of a supreme effort on the part of Australia to send out a sufficient number of combatants to end the war in a month or two. It is deplorable that there should be a single eligible young man in the Commonwealth, wasting his energy that is so urgently required in France. But, at the same time, it must be recognized that it is in the interests of the Empire that its strength should not be wasted. Each man should be employed in a manner calculated to produce the maximum amount of valuable service. To employ as a combatant a man who in two or three years would be specially qualified to act as an Army surgeon,

would be the acme of extravagant waste. It has been stated that war necessitates waste of first-class material. The duty of the persons in authority is to strain every nerve to reduce this waste to a minimum. It has been a matter of great concern in England that the number of students joining the medical schools has been falling consistently since the war began. Every endeavour has been made to counteract this deleterious circumstance. A falling-off of the number of "freshers" means a difficulty five years later. The true economist, who has the welfare of the nation at heart, will assume that the war may last five years, and will provide for this appalling eventuality. As time passes the net gain to the Empire of keeping medical students to their books will become increasingly apparent. No consideration should be shown to the individual, but it should be made abundantly clear to him in which direction his duty lies.

While we urge that no medical student should be allowed or encouraged to enlist as a combatant in the Australian Imperial Forces, we would emphasize the imperative necessity of preventing youngsters from joining the medical schools in order to gain a five years' immunity from military service. The best safeguard would be to allow medical students from the first year to enlist, and to arrange with the military authorities to grant these men leave to complete their medical studies. After graduation in medicine, they would be given commissions. Should they prove unsuitable for the medical profession, the faculty could terminate their course and the leave granted to these men would then automatically cease, and they would be taken for combatant service. An arrangement of this kind exists in England. This could be adjusted to the voluntary system, since the undergraduates of our universities reveal a splendid sense of duty, and the shirker does not enjoy a quiet time during his student life.

In the last place, it is necessary to return once more to the urgent need of co-ordinate or co-operative action of medical practitioners to meet the difficulties created by the incredible bungling of our Government, which has led to the adoption of the voluntary system. The majority of the medical profession has declared itself in favour of compulsory service for the medical profession. Since this essential for maximum efficiency is denied the profession, we have suggested a universal voluntary enrolment of the whole profession under certain well-defined safeguards. By this means, and by these means only, can the medical profession serve the Empire to full advantage.

THE MEASURE OF IMMUNITY.

Artificial immunization with living or killed bacteria in laboratory animals has been practised for many years, and the degree of success attaching to these experiments has been measured by the direct test, the power of the immunized animal to resist a subsequent, deliberate infection. The protection afforded by active immunization is rarely complete, save when a living, attenuated virus has been employed. Nevertheless, the degree of tolerance to the bacterium is frequently raised very considerably, and the behaviour of the animal toward this bacterium can then be watched for a long period. Various attemepts have been made to discover an index of the degree of tolerance which would be applicable to the human subject, namely, one which could be applied to the serum of the individual outside the body. In turn, various measures of antibody reaction of the blood serum have been suggested as the true measure of immunity, but one after another they have been discarded, or accepted with reservations. The importance of a reliable measure of immunity is particularly obvious at the present time, when soldiers have been inoculated against enteric fever, the two paratyphoid fevers and dysentery. In view of the fact that the most striking antibody produced in the serum in these infections is agglutinin, it is not unreasonable that many attempts have been made to study the amount of protection possessed by the organism at various periods after inoculation from the records of the agglutinin titre. We have recently published an extremely interesting and important thesis on the agglutinating power of the serum after inoculation with the bacilli of enteric fever and of the two paratyphoid fevers by Captain Keith Inglis. In the course of his article, Captain Inglis only once refers to the possibility of the agglutinin content of the serum being an index of the immunity of the individual to the infection. He states that the lessened agglutinin response may indicate less susceptibility, and therefore greater immunity. It is probable, however, that he is prepared, *faute de mieux*,

to accept the agglutination reaction of the serum as the probable measure of the individual's power of resisting an attack of enteric or paratyphoid fever. In a communication published in the *Lancet*, of April 6, 1918, from the Medical Research Committee, Major Georges Dreyer, Major A. G. Gibson, Dr. A. Duncan Gardner and Captain E. W. Ainley Walker point out that the degree of the immunity obtained by inoculation was gauged by the agglutinin titre, although they were "fully cognizant of the fact that the final verdict as to the protective value of inoculation must rest on the statistical results regarding incidence, severity, mortality and duration of disease among inoculated persons as compared with non-inoculated individuals." It will be noted that the appearance of the agglutinating power first becomes manifest six days (Inglis) or seven days (Dreyer and Ainley Walker) after the inoculation, and that the same power is determinable on the sixth day of illness in a spontaneous infection in the human subject (Gruber and Widal). Ordinarily enteric fever is an acute infective process of three weeks' duration. The agglutination of the serum of a patient reaches its greatest activity a few days after its appearance. Similarly, the maximum after inoculation is attained between the eighth and fourteenth days. This early appearance and rapid development of the agglutinating power is significant, when it is remembered that relapses are frequent in enteric fever, although the ultimate immunity after recovery is almost complete. These facts appear to indicate that agglutination, by itself, at all events, is not an accurate measure of immunity to enteric fever. It has reached its greatest strength before the patient is recovering; it is still very high when the patient suffers a relapse; and it is gradually falling during the course of years, when the patient is known to be absolutely immune. In the next place, we learn from Inglis, Dreyer and Ainley Walker and many other authorities that the agglutinin production depends largely on the size of the first dose, and its duration on the length of the interval between the first and second doses. Clinical experience teaches that the protection afforded by the mildest, most abortive attack of enteric fever is just as strong as that which follows a severe infection, with one or more relapses. On the other hand, it would seem from the available evidence that immunity does not exist in the absence of some agglutinin power of the serum. Captain Inglis came across seven individuals whose serum possessed this power before the vaccinating injection was administered. Closer investigation led him to the conclusion that the presence of agglutinin in the serum of a normal person indicated a previous enteric fever infection, a previous infection with a bacterium closely related to the *Bacillus typhosus*, or the ingestion of the bacilli of enteric fever. The inference is therefore justified that, while the agglutinin titre is not an exact measure of the immunity in the typhoid or paratyphoid infections, this antibody response is very closely associated with the protection. Whether any more reliable guide can be devised remains to be seen.

SHOCK.

The nature of shock continues to form a subject of enquiry, especially with those who see practical examples of it in the war zone. The Medical Research Committee have devoted much time, ingenuity and attention to this subject, and the National Research Council of the United States of America has also referred this matter to a Committee on Physiology for investigation. We have already dealt at some length in these columns with the views put forward by Cannon. This observer proved that the cardiac factor was not primary in shock and also that the vasomotor centre was in a state of increased activity. He showed that there is a diminished volume of blood in the general circulation in shock. Dr. F. W. Parham has compiled an instructive review on the recent literature on this subject, in the course of which he illuminates the various views that have been put forward, and subjects these views to a critical analysis.[1]. Nearly all observers agree that the blood in shock is locked up in the portal circulation. Frank Mann discovered that after bleeding an animal from a large vessel and also from the right auricle, 24% of the total quantity of blood remained in the body. This quantity he termed the immobile blood. In shock the immobile blood represents 61% of the total quantity of blood. Dale and Laidlaw showed that there is a direct reduction of the volume of the blood by the passage of plasma into the tissues. This results in an increased viscosity which impedes the flow, and the defective flow leads to diminished oxidation and increased acidity, and consequently to increased loss of water by osmosis. Many observers have been struck by the resemblance of the condition of shock to that of poisoning with the dissociation products of protein, to that of the toxæmia of gas gangrene and of other bacterial products. Bainbridge found that repeated injections of adrenalin produced the same chain of vascular phenomena. Cannon has noted that in extreme emotion or in severe pain, symptoms

[1] *New Orleans Medical and Surgical Journal*, April, 1918.

similar to those of shock are noted, and further, that in these two conditions there is an outpouring of adrenalin. On the other hand, it would seem that there is no direct proof of the identity of these similar conditions. Hæmorrhage and traumatism both lead to shock-like conditions. Mann assumes that hæmorrhage and shock are identical, but there are essential differences in that the heart is capable of reacting in hæmorrhage if fluid is introduced into the vessels. The introduction of fluid into the vessels in shock does not arrest the outflowing of plasma, and consequently transfusion of blood or the injection of saline solution has only a temporary effect. The author suggests that there may be a special type of traumatic shock, according to the part of the body involved. It has been proved that the capillaries have some degree of contractile power. His suggestion is that in one case the portal circulation may be primarily affected, in a second case the pulmonary circulation may be first attacked and in a third case it may be the intracranial area. The experience of war surgeons shows that shock may follow trauma inflicted on different parts of the body. Porter holds the view that shock only occurs after abdominal injuries, fractures of the femur and multiple severe wounds of the subcutaneous tissue. In the first condition the shock is the result of injury to the great splanchnic system. The other two Porter endeavours to explain by the assumption of fat embolism. There appears to be much to support this view. He has shown from a prolonged war experience that the higher nervous or psychic factors play a small, if any, part in the production of shock. It thus appears that there is still a want of agreement between the various authorities as to whether the condition following on injury to parts of the body other than the abdomen is true shock, or fat embolism or some other pathological state. Apparently the splanchnic theory has many powerful advocates, and some support is claimed for it by the observation that in many severe cases remarkable improvement has followed the application of the thoracic pump, for the purpose of re-establishing the reaction.

SERUM DISEASE.

The injection of the serum of various domestic animals into man is not infrequently followed by symptoms of illness, such as enlargement of lymphatic glands, dermal eruptions, fever, arthralgia and enlargement of the spleen. The illness, constituting serum disease, varies in severity and may endure from several hours to some weeks. It has been customary to explain this illness as due to an anaphylactic reaction, and to apply the knowledge of anaphylaxis, gained from observations on different species of animals, to the elucidation of serum disease. It is, however, well known that the susceptibility to artificial sensitization by foreign proteins varies greatly among the different animals that have been utilized for such experiments, and that different animals show varied degrees of reaction to a second injection of foreign protein. It would thus appear advisable to make use of the opportunities that may arise to study in detail the changes induced in man by the injection of the serum of animals.

It is a matter of common observation that the primary injection of serum into man occasions the symptoms of serum disease, whereas a second injection is needed in animals to call forth the anaphylactic reaction. Whether a preliminary sensitization has taken place in the human subject previously is a matter of speculation. Information is needed as to the changes following the injection of serum into man, and Warfield T. Longcope and Francis M. Rackemann have supplied some data[1] about the formation of antibodies to horse serum and the course of serum disease in the human organism. They have employed the observations upon 25 persons who have received antitoxic or antibacterial horse serum. Twenty-one patients suffered from pneumonia, and received large doses of antipneumococcal horse serum intravenously. The average amount of serum administered was 270 c.cm., though some patients received as little as 5 c.cm., and others as much as 630 c.cm. serum. Three methods have been used to demonstrate the antibodies to horse protein developed as a result of the injection, the precipitin reaction, the anaphylactic reaction after passive transference of sensitization to a guinea-pig, and specific skin reactions. Among the twenty-five patients that have been examined in detail by these investigators, twenty-one manifested characteristic symptoms of serum disease on the administration of horse serum. The blood serum of the patient and the dermal reaction have been tested in each case previously to the first injection of serum.

The precipitin reaction between the patient's serum and diluted horse serum was observed in eleven out of twelve patients exhibiting symptoms of serum disease. In two patients no reaction developed, and no symptoms of serum disease were manifested. In eleven out of twelve patients an anaphylactic reaction developed in a guinea-pig after its passive immunization with the patient's serum. In three patients no reaction was obtained, and no symptoms of serum disease were observed. Skin reactions were obtained with all the injected patients, whether they developed symptoms of serum disease or not. The investigators have made a detailed study of the relationship between the formation of the antibodies and the manifestation of serum disease. The reactions between antibodies in the human blood or tissues and the antigen of the horse serum only appear some days after the symptoms of serum disease have been noticed. The symptoms of serum disease disappear a few days after the appearance of the antibodies in the circulation. Observations by the precipitin test have shown that horse serum antigen was present in the circulation after the injection, and that it disappeared when antibody made its appearance, though both horse protein antigen and antibody might be present together in the patient's serum for a few days.

These experiments suggest that serum disease is dependent on a reaction which takes place not in the blood, but in the cells of the body. Following this cellular reaction, antibodies are produced at first slowly and later in greater concentration, and are

[1] *Journ. Exper. Medicine*, Vol. xxvii., p. 341, March, 1918.

liberated into the blood stream. As the concentration of antibodies in the blood increases, the antigen rapidly disappears, and serum sickness abates coincident with the reversal of the content of antigen and antibody in the blood. While these results do not offer a complete explanation of the onset of serum disease, they add valuable information about the biological phenonema accompanying these reactions.

THE PROPHYLAXIS OF DYSENTERY.

Intestinal infections are communicated either from patient to patient directly or through the medium of food, or by the contamination of food or water by the causal organism harbouring in the body of some person who does not manifest any signs of the diseases. The prophylaxis is a matter of meticulous care when the infecting agent is derived from a person suffering from one of these diseases. Enteric fever, the paratyphoid fevers and dysentery could be stamped out with certainty were this the only method of spread. Every patient would need strict isolation from the earliest stages of the infection, and adequate measures would have to be taken to disinfect the excreta. The possibility, however, of the diseases being spread by persons not suffering from them renders the problem an exceedingly difficult one. In the case of enteric fever, all attempts hitherto have failed to destroy the bacilli harbouring in the intestines or gall-bladder of convalescents or apparently healthy individuals. The treatment of the so-called "carrier state" in the case of amœbic dysentery offers better prospects of success, probably because the entamœbæ are more accessible to drugs and also because they are more readily destroyed than *bacillus typhosus*. Hitherto some success has been obtained by the use of emetine bismuth iodide. It appears that in southern Texas and Mexico dysentery has been treated popularly by the exhibition of decoctions of a plant called *Castela nicholsoni*, or *chaparro amargossa*, as it is locally termed. Dr. S. Shepheard and Dr. D. G. Lillie,[1] having had their attention drawn to this plant and its alleged properties, by Nixon of Antonio, undertook an investigation of its power to destroy *Entamœbae histolytica* in the stools of persons who had previously been treated with emetine bismuth iodide without success. Decoctions were prepared from the twigs and leaves, from the root bark and from the decorticated root. The authors are inexact in their directions of the manner in which they prepared the decoctions. They boiled a "heaped teaspoonful" of the powdered material in 600 c.cm. of water for 15 or 20 minutes, and strained the fluid after it had cooled. The fluid was given to the "carriers" to drink three times a day, and in addition the same quantity was injected into the bowel twice a day. This treatment was given to 70 persons. An attempt is made to distinguish between those treated with decoctions of the twigs and leaves and those treated with the root or its bark. From the account published it does not appear that any difference was manifest. These patients passed motions containing either free *Entamoebae histolytica* or their cysts. The treatment failed completely to destroy the free amœbæ in the motions. Emetine had previously been tried and had failed as signally. In 31 instances the motions were found to be free from cysts at not less than six examinations undertaken at least five weeks after the termination of the treatment. Dr. A. J. Ewins extracted a bitter active principle and four persons were treated with it. In no case was a cure effected. In addition, seven other "carriers" were treated with decoctions of a similar drug, named simaruba bark. Three persons in whose stools cysts had been found, were cured in this way. From these experiments it would seem that further and more precise investigations should be undertaken. The fact that 34 of a total of 81 persons harbouring *Entamoebae histolytica* were freed of their parasites is certainly suggestive, more especially in view of the fact that the parasites had persisted in the intestinal contents after the exhibition of emetine bismuth iodide. Apparently only one sample of the drugs had been employed and the action *in vitro* of the constituents on the amœbæ had not been studied. The decoction caused nausea, vomiting and abdominal pains in many of the persons, but in others it appeared to exercise a beneficial tonic action.

[1] *The Lancet*, April 6, 1918.

Vital Statistics.

TASMANIA.

The vital statistics published by the Government Statistician of Tasmania are divided into two parts, those dealing with the urban districts and those dealing with the rural districts. The following is the summary of the figures applying to the first quarter of the year 1918.

Hobart and Launceston.

During the quarter there were 538 births, 334 in Hobart and 204 in Launceston. This number represents a decrease, both on the figures for the corresponding quarter of 1917 and on the average for the first quarter of the preceding five years. The birth-rate in Hobart was 33.21, in Launceston was 32.8, and in the combined urban districts was 32.93 per 1,000 of population.

The number of deaths registered in Hobart during the quarter was 158, while that in Launceston was 77, making 235 for the urban districts. While the number of deaths was lower than that registered in the corresponding quarter of 1917, it was actually higher than the average for the corresponding quarter of the preceding five years. The death-rate for Hobart was 15.64, for Launceston was 12.32, and for the urban districts 14.39 per 1,000 of population. The number of infants under one year of age who died in the quarter was 63, being 39 in Hobart and 24 in Launceston. The infantile mortality was consequently 117.1 per 1,000 births, 116.7 in Hobart and 117.6 in Launceston. There were 35 deaths from diseases of the cardio-vascular system, including 14 from cerebral hæmorrhage. There were seven deaths from Bright's disease. The deaths from infective processes included 15 from tuberculosis, 20 from gastro-enteritis, three from diphtheria, two from enteric fever, four from pneumonia, three from meningitis and one from pertussis. There were 22 deaths from cancer. No deaths at all were certified as having been due to puerperal septicæmia. There were six deaths from syphilis.

Urban Districts.

The total number of births in the country districts was 724, which is equivalent to an annual birth-rate of 22.64 per 1,000 of population. The rate was higher in the corresponding quarter of 1917, but lower in that of 1916. The total number of deaths recorded in the quarter was 189. In the corresponding quarter of 1917 the number of deaths was 220, and in 1916 it was 264. The death-rate expressed as an annual rate was 5.48. From the meagre details published, it appears that there were 12 deaths from pulmonary tuberculosis, 10 from cancer, three from diabetes, two from diphtheria and two from influenza.

Abstracts from Current Medical Literature.

PATHOLOGY.

(207) Intestinal Obstruction.

C. A. Dragstedt and J. J. Moorhead have endeavoured to ascertain whether any immunity to a toxin can be demonstrated during intestinal obstruction (*Journ. Exper. Medicine*, March, 1918). Despite the large amount of recent investigation on intestinal obstruction, the cause of death still remains unknown. There is a general agreement that there is no systemic bacterial invasion by the micro-organisms in the obstructed intestine. Most investigators suggest that a rapidly developing and quickly fatal toxæmia occurs without defining concisely the nature of the toxin. If an immunity to a toxin can be demonstrated in these cases, it will show that the toxic factor belongs to the group of proteins, the only class of substances possessed of antigenic properties. As the symptoms, caused by a closed intestinal loop whether produced by ligature and a reconstruction of the alimentary tract by gastro-enterostomy, or by resection of the loop and an end-to-end anastomosis of the intestine, parallel closely the symptoms of acute intestinal obstruction, the authors have used the following procedures, (1) the production of open intestinal loops, (2) the production of a blind duodenal stump, (3) ligature of the duodenum without anastomosis and (4) injection of the material from closed intestinal loops. All the experiments were carried out upon dogs. When open loops of the duodenum, jejunum or ileum were made, and allowed to drain into the peritoneal cavity, about half the dogs which had been so treated, died. If any immunity is developed against an antigen formed in the cavity of loop the continual passage of the antigen into the peritoneal cavity should produce immunization. Dogs which survived were treated in various ways, with the object of ascertaining their resistance to intestinal obstruction, but without obtaining any evidence of an increased resistance. In other dogs closed intestinal loops were made, and removed before perforation occurred. About half the dogs died from the toxæmia produced despite the ante-mortem removal of the loop. In these loops there is marked destruction of tissue in addition to the accumulation 100 c.cm. of bloody fluid. The surviving dogs showed no increased resistance to intestinal obstruction as tested by the production of closed loops, duodenal stumps, or the injection of the fluid from closed loops. Dogs, recovered from the effects of intestinal obstruction, show no augmented resistance to the effects of injections of fluid from closed loops.

(208) Detoxication of Toxin.

H. D. Taylor and J. H. Austin have tested the action of antiseptics on the toxins formed by *Bacillus welchii* (*Journ. Exper. Medicine*, March, 1918). Virulent strains of *Bacillus welchii* were grown for 18 hours in a glucose broth containing fragments of rabbits' muscles. The medium was covered with a layer of sterile paraffin oil, and the cultures incubated in a vacuum jar from which the air had been exhausted. After incubation the fluid was spun in a centrifuge, and filtered through a Berkefeld N candle. A number of fatal doses of the toxin (up to 6 doses) was mixed with Dakin's solution, 0.25% phenol or 2% chloramine-T solution, and allowed to stand for five minutes before injection into pigeons. The pigeons survived when sodium hypochlorite or chloramine-T had been added to the mixture, but died when phenol had been employed. Experiments were also carried out in which serum was added to the toxin before the antiseptic. No diminution of the disinfecting power of sodium hypochlorite or chloramine-T was observed under these conditions.

(209) Blood Pressure in Fibrillation of the Auricles.

A. E. Cohn and C. Lundsgaard have studied the blood pressure in patients suffering from fibrillation of the auricles by the method of Gaertner (*Journ. Exper. Medicine*, April, 1918). It is difficult to estimate the blood pressure in persons suffering from the fibrillation of the auricles by the ordinary methods. As the pressure in the cuff is lowered a few heart beats escape at the maximal systolic pressure, and a greater number of heart beats escape until the pressure reaches the minimal systolic pressure. In the method of Gaertner one finger is rendered bloodless, and the pneumatic cuff is placed around the first phalanx. The pressure in this cuff is lowered until the blood begins to flow into the fingers. In the author's experience the tonometer readings at the digital arteries have been always lower than the brachial readings, the average difference being 20 mm. Hg.. Comparisons between the results obtained in the digital arteries, with those obtained with the brachial arteries in the patients suffering from auricular fibrillation, shows that the readings with the brachial arteries are erroneous, since they are frequently lower than those of the digital arteries. Sufficient accuracy for clinical purposes may be obtained by taking the pressure in the brachial artery when about forty beats can be felt in the radial pulse.

(210) Vaccine Virus.

H. Noguchi (*Journ. Exper.* Medicine, March, 1918) had shown that a sample of vaccinia virus, free from bacterial impurity, and of sufficient strength for vaccination, can be propagated in the testes of rabbits. The vaccine virus has now been transmitted through a sufficient number of generations to establish the absence of any deterioration in virulence after prolonged sub-culture. The virus remains sufficiently active to cause a confluent eruption when diluted one thousand times. The virulence increases slightly during the initial passages through the testicle of the rabbit. The testicular strain shows no greater tendency to localize in various organs than the skin strain. Both may localize in adjacent lymph glands when introduced subcutaneously, but other organs are not affected. Intravenous injections of 1 or 2 c.cm. undiluted stock vaccine of the testicular, or of the dermal strain, results in a generalized skin eruption over the entire body of rabbits. The eruption may be confluent on the mucous membranes of the mouth, nostrils and genitalia. The testicular virus remains virulent when diluted with Ringer's solution, or normal saline solution, but loses its virulence when more rapidly diluted with distilled water. At temperatures above 18° C. deterioration proceeeds rapidly. Pure glycerine destroys the virus in 24 hours at 4° C., while 40% glycerine destroys the virus in one month at 18° C.. Phenol in concentration of 2% destroys the virus in 24 hours, but concentrations below 1% have no injurious action. The vaccine retains its virulence better in a sealed tube containing oxygen or carbon-dioxide. Desiccation decreases the virulence of the vaccine virus. In the dried state the vaccine keeps as well as in the form of emulsion. Iodine (1 in 10,000) is a powerful vaccinicide, but the solution and potassium iodide do not possess any injurious action.

(211) Transplantation of Kidney Tissue.

M. S. Fleisher (*Journ. Med. Research*, January, 1918) has examined the microscopical changes seen in pieces of kidney of the guinea-pig after transplantation into subcutaneous pockets in the abdominal wall of rabbits. The rabbits have been normal rabbits, or rabbits that have been immunized by repeated intra-peritoneal injections of sterile emulsions of kidney cells. The pieces of kidney have been examined at various intervals up to one month after transplantation. The piece of tissue in the normal rabbit remains alive and the tissue shows signs of regeneration. In the immunized animal no regeneration occurs. Leucocytes collect around the transplanted tissue in greater numbers in the immunized animal, though they do not penetrate the tissue so quickly. In the normal rabbits the formation of connective tissue and the invasion of the graft occurs more quickly than in the immunized animals. The author is unable to decide whether any serological effects in addition to the cellular reactions account for the different behaviour of the grafts.

PÆDIATRICS.

(212) Tuberculin Tests in Childhood.

Warner (*Arch. of Pediatrics*, January, 1918) has selected from among the various tuberculin tests four as being most practicable for use in testing children; the von Pirquet, the intradermal, the multiple papillary cutaneous, and the subcutaneous. The author considers that a thoroughly conducted subcutaneous test in children, under the proper precautions of selection of cases and previous temperature con-

trol, together with a careful consideration of the history of the case, is one of the most valuable, if not the most valuable, tuberculin test for the purpose of separating the active from the latent cases. The neglect of its use in children has been due probably to the amount of time involved and to the unfounded fear of violent reactions. These are not to be feared in glandular cases, and when they do occur, besides the information they afford, they are beneficial in a therapeutic sense. The von Pirquet test simply implies that the child has at some time or another become infected with the tubercle bacillus. It does not reveal whether the infection is active or latent, but it is of great importance, when the response is repeatedly negative, as this may be accepted as evidence of the absence of a prior or present infection. The advantage of the intradermic test over the von Pirquet consists in the certain absorption and the exactness of the requisite dose. Its chief use is in determining the degree of hypersensibility of children suffering from tuberculosis, when it is desirable to regulate the dose of tuberculin with which to commence treatment. The multiple papillary cutaneous test seems to be of distinct value in its applicaton to children. It was first described by Ellis, who claimed to be able to detect, by its means, the various stages of tuberculosis from the latent to the advanced, and the amount of tissue involved, and to point the way to accurate prognosis and treatment. In this test the scarifications open the papillary layer of the skin, the most sensitive of all the layers to tuberculin, according to the author, and draw blood. The scarifications are made through each of seven drops of the solution placed in a row on the inner side of the forearm. The solutions used are bovine, full strength for "mark No. I." The other five solutions are made from old tuberculin, human type, "mark" No. II. a 1-10 solution, No. III. 1-100, No. IV. 1-500, No. V. 1-1,000, No. VI. 1-10,000, and "mark" No. VII. the control. Reactions are divided into four classes. Patients reacting to dilutions of 1-500 are called "hypersensitives," those definitely responding to 1-100 are called "sensitives," those classed as "sub-sensitives" and "insensitives" respond to dilutions under 1-100. A high coloured œdematous reaction denotes an active lesion; a dark-coloured reaction signifies an old or quiescent lesion. If nearly black, with no swelling, the prognosis is bad. No reaction is shown if a large amount of tissue is involved, or the case is far advanced. Incipient cases, involving only one small long focus, yield a reaction to "mark" No. I. or No. II. Probably the extent of the lesion yielding a No. VI. reaction would be a very small, fresh patch, just definitely detectable by the stethoscope at one or both afices, and covering at most an area of 6 square centimetres, larger areas and older disease giving fewer reactions. A moderate area gives No. III. or IV. Tubercular affections of bone and of the eye yield lower reactions; glandular infection usually give higher reactions. Two or more lesions of dissimilar tissues give the highest reactions. A No. III. reaction is the most important mark for the pædiatrician, as it is the dividing line between active and latent infections. With a No. III. Ellis always considers that an active disease is present. The author concludes from his observations that further investigations by means of a reliable tuberculin test should be undertaken to separate active from latent cases. All children in whom tuberculosis is diagnosed by a tuberculin test, should be kept under close observation by the health authorities, and, if possible, sent to an institution for at least one year or until the reaction to the test is negative. In the treatment of clinical tuberculosis the case should receive the benefit of tuberculin, and the initial dose should be determined by use of the hypersensibility tests. The prospect for the eventual eradication of tuberculosis depends on the prophylactic measures directed to the care of infected children.

(213) Intestinal Intoxication in Infants.

Preceding the development of toxic symptoms in intestinal intoxication there is pronounced diarrhœa, vomiting and diminished ingestion of fluid. In the acute stage of the symptoms the excretion of urine is greatly diminished, and at this time the urine contains albumin and abundant casts. Schloss (*Amer. Journ. Dis. of Children*, March, 1918) investigated a number of cases of intestinal intoxication, with especial reference to the loss of fluid and impaired secretion of urine. Infants suffering from intestinal intoxication showed a marked increase of non-protein nitrogen and urea in the blood. While there was an increase in blood concentration in these cases, as indicated by the data furnished by the total nitrogen, specific gravity, corpuscular volume and total solids, the increase was insufficient to account for the increase in non-protein nitrogen. The power of elimination by the kidney in intestinal intoxication was found to be greatly impaired. The cause of this could not be proved to be a definite kidney lesion. It apparently depended on the depleted water supply of the body, the result of great loss of water in the stools and of diminished intake due to vomiting. The acidosis, which occurs in the majority of cases of intestinal intoxication, apparently was due to a failure of the kidney properly to fulfil its function of preserving the alkali reserve of the blood and not to a formation of abnormal acids in excess. Such acidosis has been shown to develope as the urinary secretion diminished, and failed to appear when a normal amount of water was absorbed. In a number of cases the acidosis showed a definite relationship to the symptoms, which disappeared on correction of the acidosis by an alkali. There is a close relation between intestinal intoxication and uræmia. In the latter the kidney fails to fulfil its proper function because of an anatomical lesion, while in the former the same result is brought about by loss of fluid. Waste products, normally excreted through the kidneys, are retained because there is insufficient fluid for diuresis. Similarly to uræmia, there are two symptom-groups in intestinal intoxication. In one group there are convulsions, involuntary muscular movements, muscular twitching and coma. The onset is acute; emaciation is not marked, and diarrhœa is slight or absent, while food is refused or vomited. In the second group, the onset is less acute, but occurs after vomiting and diarrhœa of some days' duration. Convulsions rarely occur, and the infant is somnolent or semi-stuporous, instead of comatose. Wasting is very marked, and there is the shrunken appearance due to great loss of fluid. Acidosis is frequent in both diseases, but apart from this both intestinal toxæmia and uræmia appear to be a form of poisoning. Whether the poison is a product which the kidney fails to excrete, whether it arises from disordered metabolism or is elaborated by bacterial growth in the intestinal tract is still an unsolved problem.

(214) Acute Syphilitic Meningitis.

The clinical manifestations of syphilitic meningitis may be divided into three groups, whether occurring in the acquired or hereditary form of the disease. (1) A latent form with the general manifestations of syphilis but no symptoms of meningitis; the spinal fluid in these cases is under raised tension, and contains numerous cells and an increased amount of globulin. (2) A true meningitis, a rare condition, with the general symptoms and spinal fluid changes of an acute meningitis. (3) A more severe type, resembling an acute meningo-encephalitis, with high fever, convulsions, marked rigidity of the the neck and, frequently, localized paralysis, especially of the face and ocular muscles. Leitch (*Amer. Journ. of Dis. of Chlidren*, March, 1918) reports a case of acute syphilitic meningitis in an infant, aged 12 months. The clinical picture closely resembled that of a tuberculous meningitis. The gradual onset, vomiting, constipation and drowsiness were all typical of that disease. In spite of three negative tuberculin skin tests and a diligent search for bacilli in the spinal fluid, the case was thought still to be of tubercular origin. A search for choroid tubercles, however, first suggested the true cause of the illness, as a typical syphilitic choroiditis was found. This led to the examination of the spinal fluid for spirochaetes, which were present in large numbers. The symptoms, however, differed in some important respects from those of tuberculous meningitis. There was no fever, no convulsions, and the spinal fluid was turbid, with a relatively small percentage of lymphocytes. Acute syphilitic meningitis in infants is a very rare disease, not more than six cases having been reported.

British Medical Association News.

SCIENTIFIC.

A clinical meeting of the New South Wales Branch was held at the B.M.A. Building, 30-34 Elizabeth Street, Sydney, on May 10, 1918, Dr. F. P. Sandes, the Vice-President, in the chair.

Dr. C. E. Corlette exhibited some clamps which he had had made at the Sydney Hospital, for the treatment of fractures. He pointed out that these clamps were barbarous instruments, but he contended that in certain cases barbarous instruments were necessary. They were placed with the choice of two or three evils in these cases. There was a difficulty in obtaining a good alignment in fractures of the femur. Sometimes the skin would not tolerate extension. It was suggested that, in these cases when a good alignment could not be obtained, the proper method to employ was the operation of plating. This was a nice operation to watch, but he would not like to have his own femur plated. There was risk of sepsis. He admitted that sepsis only occurred in the practice of other surgeons, but it was met with at times. Sepsis spelt a disaster of the first magnitude. The use of clamps might be regarded as a sort of half-way house. The first instrument exhibited, Schmerz's clamp, had been used in America in several of the war hospitals. According to the reports, it caused little irritation and was not painful, if properly applied. Schmerz's clamp could be applied so as to carry a weight of from 20 to 25 kilograms without distress to the patient.

The second clamp shown was the "ice-tongs." Dr. Corlette demonstrated how this instrument could be applied.

He also exhibited a modification of St. Luke's Hospital splint. He had had the modification made by the carpenter at the Sydney Hospital. He demonstrated the facility of adjustment in any desired position. The angle of the leg piece and that of the thigh piece could be altered as required, and any form of extension could be applied while the splint was being used.

His fourth exhibit was a simple modification of a Soxhlet fat extraction apparatus, which he had employed for the purpose of siphoning off the urine from the bladder in a case of cystostomy. The apparatus consisted of a pickle bottle with two tubes passing through a cork. As soon as the bottle was full, the fluid flowed over the curve of the tube, which reached to the bottom, and this set the siphon in action. The fluid was supplied from a large reservoir suspended above the patient's bed. As the fluid siphoned out of the bottle, it passed along the one limb of a Y-shaped tube, and this had the effect of sucking on the other limb. This second limb of the Y-shaped tube was connected with a tube leading from the opened bladder. He claimed for this simple and inexpensive device an efficient drainage of the bladder.

Dr. F. P. Sandes was greatly interested in Dr. Corlette's exhibits. He expressed his admiration of the splint and recognized its many advantages. He suggested that a wider interval should be allowed between the movable side bars on the thigh piece. In reference to the clamps shown, he pointed out that these instruments were but modifications of other known methods. They were all somewhat ineffective, in addition to the risk they carried of inducing sepsis. If he had a fracture of his femur and good alignment could not be attained, he would run the risk of plating. If sepsis should set in, it would clear up without harm, provided that the plates were removed at once. The chief disadvantages of plating were the slowness of union and the loss of functional activity.

Dr. H. S. Stacy asked Dr. Corlette whether he had yet tried these clamps. He spoke with enthusiasm of the pulley method of treating fractures of the femur. By its means good alignment could be obtained. He pointed out that in many private hospitals the pulley could not be employed, because there was no fixed staple or other convenient object to which the distal end of the pulley could be attached.

Dr. D. Kelly raised the question of the cause of frequent overlapping in fractured femur. He did not think that it was due to muscular action. The surgeon could pull as hard as he liked and nothing happened. On the other hand, if a wedge were inserted between the fragments, the edges could be brought into proper apposition. He did not think that the clamps would be employed to any considerable extent in these cases.

Dr. L. G. Teece stated that he had seen during the past two years several cases of fractured femur in which Steinmann's pins had been used. The principle was the same as with clamps. In many cases union took place and the patient was sent off from the base to an orthopædic hospital with a small sinus which would not heal. These persistent sinuses frequently led to a dangerous sepsis. At times the pin was inserted too far and entered the joint. In these cases sepsis led to an arthritis and ultimate ankylosis. He did not think that clamps had any place in the treatment of fractured femora. He had found that Thomas's splint and Sinclair's glue sufficed for all cases, except when the fracture was situated in the upper third of the femur. In these cases Robert Jones's abduction splint should be applied.

Dr. Corlette replied briefly. He admitted that the criticisms of the appliances appeared to be justified. He thought that the risk would be less with the clamps than with Steinmann's pins.

Dr. Archie J. Aspinall read some notes on a case of intestinal obstruction from a large gall-stone in the ileum, and exhibited the stone (see page 492).

Dr. D. Kelly cited a case of an old lady of 71 years with sugar in her urine, who was suffering from symptoms of intestinal obstruction. He opened her abdomen and found a volvulus of a segment of the small intestine. He considered at the time that it might be due to a thrombus in the superior mesenteric vessels. He resected 180 centimetres of bowel and did an anastomosis. The patient was given a dose of calomel later, and subsequently passed a large gall-stone. Her symptoms then cleared up.

Dr. F. P. Sandes spoke of a case of gall-stone ileus in a feeble old lady. At the operation he had been able to push the small stone down to the ileo-caecal valve. It had been passed later.

Dr. Aspinall was interested to learn that Dr. Sandes had been able to push the stone down as far as the ileo-caecal valve. In his case the contraction of the muscular wall had prevented him from pushing the stone down for more than a short distance.

Dr. Archie Aspinall read the notes of a case of complete avulsion of the skin of the scrotum and penis. The patient was a man, aged 27 years, who had been admitted to the Royal Prince Alfred Hospital shortly after having met with a machinery accident. His trousers had been caught in the shaft of some machinery and had been born off his body. He felt as if his scrotum and penis had been completely torn away. He did not lose consciousness. On examination, it was found that the scrotum had been torn away, one portion lying reflected on the thigh on either side. The skin had also been removed from the penis. The testicles were exposed at the upper end of the wound. The *meatus urethrae* had been torn and portion of the *glans penis* was bruised and scratched. Dr. Aspinall immediately operated, while Dr. Robertson anæsthetized the patient. The parts were shaven and cleansed. A catheter was passed and urine drawn off. The catheter was left *in situ*. The testes were replaced and the subcutaneous tissue was brought over them in the middle line with catgut sutures. The skin was then carried over to the middle line and held in place with interrupted sutures. All bleeding from the penis was arrested. Two flaps were then prepared, one from either groin, and were stitched together. The flaps were then sewn around the penis to form a new covering. Sutures were passed through the urethra and skin, so as to secure the former to the latter. The skin was also stitched to the remains of the *glans penis*. The areas from which the flaps had been taken were then closed with sutures and the skin scarified to relieve tension. The skin around the penis and of the new scrotum was also scarified. A drainage tube was inserted at the lower end of the wound. Four days later the end of the flap covering the penis was dark in colour and the skin between it and the scrotum was suppurating. Three days later there were signs of sloughing of the dorsum of the penis and of the skin over the scrotum. Later on Dr. Aspinall found it necessary to graft some skin on to the raw areas. Much difficulty was experienced in getting the grafts to take. Eventually the wounds healed completely. He demonstrated that the skin of the new scrotum was only

sufficient to serve its purpose and was bound down by scar tissue. The penis had retracted and had practically no covering. When in the state of erection the scrotal skin was pushed forward like an open umbrella. The patient complained that erection was painful and uncomfortable. He asked for suggestions as to the best way of improving the patient's condition.

Dr. T. H. Fiaschi considered that the man could not live as he was. He was a married man and should be able to exercise marital function. He suggested that a small median cystostomy should be performed as a preliminary procedure, to insure that the field of the subsequent operation would not be soiled with urine. A long flap of about 8 to 10 cm. by 2.5 to 4 cm. should be prepared from one or other side. This would allow for subsequent contraction. The skin should be detached, except at the base. In the next stage the penis should be set free from the skin and cicatricial tissue below and on both sides, but not above. The bridge of skin should then be applied to the raw exposed portion of the penis, in the same way as is done in plastic operations on the nose. If this failed, there would still be skin left on the other side for a second attempt.

Dr. L. W. Bickle referred to a case of elephantiasis that he had seen many years before. An operation had been performed by taking skin from the upper portion of the growth and wrapping it around the penis and testes. He considered that it was unnecessary to do a preliminary median cystostomy.

Dr. F. U. Sandes did not quite agree with Dr. Fiaschi. He thought that an attempt should be made to dissect out the penis and to graft skin on to the raw surface. The difficulty to be met would be to keep the organ extended forward. If this could be effected for from 48 to 72 hours, the success of the procedure would be assured.

Dr. Aspinall thanked Drs. Fiaschi and Sandes for their suggestions. He agreed that the proposal put forward by Dr. Fiaschi would probably suffice, but unfortunately the patient definitely refused to allow him to interfere with his urinary passages. He had stated that if nothing could be done without intra-urethral manipulation, he would remain as he was. He was inclined to incise the scrotal skin completely around the base of the penis and attempt to suture it around the shaft of the penis at its base, in the fashion of a closed umbrella. The defect between the scrotum and the penis could be dealt with later.

Dr. Aspinall also exhibited a calculus which had become impacted at the meatus of the urethra of anegro. The urethral passage was only blocked at times.

Dr. H. S. Stacy read some notes on a case illustrating the restoration of supination by Verrall's splint, and demonstrated the patient with the splint in position. He also showed another man to whose arm he had applied Verrall's splint 24 hours before. The notes will be found on page 493.

Dr. D. Kelly considered that Verrall's splint was very ingenious. He asked Dr. Stacy whether he did not think that the forearm should be returned to the position of full supination more gradually. He stated that the results in both patients were very excellent, and he expressed surprise at the improvement in the second case within 24 hours.

Dr. F. P. Sandes was very glad to have heard Dr. Stacy's account of the uses of Verrall's splint and of his uncompromising condemnation of the internal angular splint. In his opinion, the internal angular splint should only be used as a first-aid apparatus.

In his reply, Dr. Stacy informed Dr. Kelly that full supination was effected quite slowly. In his first case it took two months. He laid emphasis on the necessity of applying massage in these cases.

Dr. H. Ritchie read the notes of a case of splenomegalic polycythenia and exhibited the patient (see page 493). He pointed out that no other treatment than venesection had been applied, and asked those present if they could make any suggestion. He was of opinion that X-rays would not lead to any benefit. The interest in the case centred around the fact that, although there was an enormous increase in the viscosity of the blood, there was no increase in the blood pressure. He assumed that the vaso-dilatation in the cutaneous vessels counteracted the effect of the increase of viscosity and kept the blood presure low.

Dr. W. F. Litchfield read the notes of a case of harlequin fœtus and showed the patient, who had attained the age of eight years (see page 494).

Dr. F. P. Sandes asked whether any attempt had been made to treat the condition, either with thyroid gland or with some of the other organ preparations. He had seen a similar condition in a young man. This patient had been treated with thyroid gland, but he regretted to state that no improvement followed.

Dr. W. F. Litchfield had not tried thyroid, but was prepared to do so, although he did not anticipate that it would do much good. In ordinary ichthyosis thyroid only yielded slight temporary benefit.

Dr. J. G. Edwards read a short account of a congenital radio-ulnar synostosis and exhibited the skiagram (see page 494).

Dr. L Herschel Harris, of Sydney, has been elected an Honorary Member of the American Röntgen Ray Society. This Society has been in existence for some years, but has not been lavish in granting honorary membership to distinguished radiologists in other countries. There are, at present, seven Honorary Members, to wit:—

Dr. W. B. Cannon.
Dr. W. D. Coolidge.
Sir James Mackenzie Davidson.
Dr. C. A. Porter.
Dr. W. M. Sweet.
Dr. Nikola Tesla, and
Dr. Herschel Harris.

In congratulating the new recipient of this honour, we have to express our satisfaction that the progress of science in Australia is being watched carefully and that the medical profession here is being accorded its proper place.

Naval and Military.

CASUALTIES.

The casualty lists are becoming larger. On June 3, 1918, the 406th list was issued, and contained more than the usual number of names. The 407th list, which was released five days later, contained nearly twice the number of names. In these two lists there are records of the wounding of four medical officers. In the case of Captain Robert Keith Rae, the casualty was of the nature of gas poisoning. The other three medical officers, Major Crichton Raoul Merrillees, Captain Robert Bruce Forsyth, M.C., and Captain Harris Mendelsohn are named in the lists of the wounded without further comment.

HONOURS.

The following distinctions have been awarded to members of the Australian Army Medical Corps on active service.

Officer of the Most Gracious Order of the British Empire.

Lieutenant-Colonel John Kellerman Adey.
Lieutenant-Colonel William Ernest Grigor.

Distinguished Service Order.

Lieutenant-Colonel A. L. Dawson.
Major W. Vickers.
Captain M. J. Holmes.

Military Cross.

Captain R. D. Bartram.
Captain I. B. Jose.
Captain C. M. Samson.
Captain J. A. Shanasy.

APPOINTMENTS.

The following appointments, etc., have been notified in the *Commonwealth of Australia Gazette*, No. 83, of June 6, 1918:

Naval Forces of the Commonwealth.

Royal Australian Naval Brigade.

Harold Henry Field Martell, L.R.C.P.E., is appointed temporarily as Acting Sub-District Naval Medical Officer, Albany, for the period from December 15, 1917.

to February 28, 1918, with allowance at the rate of £60 per annum, during the absence on sick leave of Surgeon (temporary) John Ignatius Parer, R.A.N.B.

Australian Imperial Force.

Army Medical Corps.

Major A. H. Gibson to command No. 12 Field Ambulance and is granted temporary rank of Lieutenant-Colonel whilst commanding. 15th February, 1918.

Captain J. W. Farrar to be Registrar, No. 3 Australian General Hospital, and is granted the temporary rank of Major whilst so employed. 28th February, 1918.

We regret to announce that the death of Dr. William Henry Burton, of East Malvern, Victoria, took place on June 5, 1918.

Public Health.

NEW SOUTH WALES.

The following notifications have been received by the Department of Public Health, New South Wales, during the week ending June 1, 1918:—

	Metropolitan Combined District.		Hunter River Combined District.		Rest of State.		Total.	
	Cs.	Dths.	Cs.	Dths.	Cs.	Dths.	Cs.	Dths.
Enteric Fever	1	0	1	0	8	3	10	3
Scarlatina	12	0	0	0	13	0	25	0
Diphtheria	53	0	15	0	55	1	123	1
*Pul. Tuberculosis	24	0	0	2	0	2	24	4
Poliomyelitis	0	0	1	0	2	0	3	0

* Notifiable only in the Metropolitan and Hunter River Districts, and, since October 2, 1916, in the Blue Mountain Shire and Katoomba Municipality.

VICTORIA.

The following notifications have been received by the Department of Public Health, Victoria, during the week ending June 2, 1918.—

	Metropolitan.		Rest of State.		Total.	
	Cs.	Dths.	Cs.	Dths.	Cs.	Dths.
Enteric Fever	2	0	2	1	4	1
Scarlatina	20	0	29	0	49	0
Diphtheria	90	2	45	1	135	3
Pulmonary Tuberculosis	18	4	7	2	25	6
C'bro-Spl. Meningitis	1	—	0	—	1	—
Poliomyelitis	0	—	3	—	3	—

QUEENSLAND.

The following notifications have been received by the Department of Public Health, Queensland, during the week ending June 1, 1918:—

Disease.	No. of Cases.
Enteric Fever	5
Scarlatina	6
Diphtheria	60
Pulmonary Tuberculosis	19
Cerebro-spinal Meningitis	1
Poliomyelitis	2
Erysipelas	3

SOUTH AUSTRALIA.

The following notifications have been received by the Central Board of Health, Adelaide, during the week ending May 25, 1918:—

	Adelaide.		Rest of State.		Totals.	
	Cs.	Dths.	Cs.	Dths.	Cs.	Dths.
Enteric Fever	0	0	5	0	5	0
Scarlatina	1	0	11	0	12	0
Diphtheria	2	1	31	2	33	3
Pulmonary Tuberculosis	0	0	6	4	6	4
Erysipelas	0	0	2	0	2	0
Morbilli	0	0	1	0	1	0
Pertussis	0	0	2	0	2	0
Favus	0	0	1	0	1	0

WESTERN AUSTRALIA.

The following notifications have been received by the Department of Public Health, Western Australia, during the week ending May 25, 1918:—

	Metropolitan. Cases.	Rest of State. Cases.	Total. Cases.
Enteric Fever	0	9	9
Scarlatina	32	9	41
Diphtheria	17	28	45
Pulmonary Tuberculosis	11	5	16
Malaria	1	0	1
Erysipelas	4	0	4

TASMANIA.

The following notifications have been received by the Department of Public Health, Tasmania, during the week ending May 25, 1918:—

Disease.	Hobart. Cases.	Launceston. Cases.	Country. Cases.	Whole State. Cases.
Enteric Fever	1	0	0	1
Scarlatina	0	2	0	2
Diphtheria	0	2	6	8
Pulmonary Tuberculosis	3	0	1	4

Hospitals.

THE ADELAIDE HOSPITAL.

The annual report of the Adelaide Hospital is published as a Governmental document in the *Government Gazette*, and is subsequently issued in book form, together with some information concerning the institution and some reproductions of photographs of parts of buildings and grounds. The report for the year 1917 has recently been issued in this form. It is not a satisfactory report from a medical point of view. The number of "cases admitted" was 4,919. We presume that the word "case" is used to signify attacks of illness for which treatment is sought, so that if a person were admitted twice in one year for different complaints, the record would be for two "cases." As a rule, the number of patients is recorded; this method is perhaps more rational. The number of cases is 58 more than that dealt with in 1916 and 94 less than that dealt with in 1914. At the end of the year there were 246 patients under treatment. No information is given concerning the number of patients discharged or concerning the number of persons under treatment at the beginning of the year. It is stated that 297 patients died, and that the mortality rate was 7%. From these figures it would appear that there were 313 patients in the hospital on January 1, 1917, and that 4,537 were discharged during the year. The average number of patients in the hospital at any given time was 297. This figure has once before been exceeded. The average duration of residence of those patients who were discharged was 21 days. The total annual expenditure was £41,678. It is stated that the cost per bed for the year was £133 11s. 8d. Calculated on the average number of patients in the hospital, it appears that the cost per patient per day was 7s. 8¼d.

The Chairman of the Board of Management refers in his special report to the great loss sustained by the Hospital by the death of Dr. C. E. Todd and Dr. A. H. Gault.

He also makes reference to the fact that Colonel W. T. Hayward was created a Commander of the Order of Saint Michael and Saint George, that Colonel C. T. C. de Crespigny received the Distinguished Service Order, that Major Cavanagh-Mainwaring was decorated with the Silver Eagle of Servia, and that Captain D. Barlow, Captain J. R. S. G. Beard, Captain W. L. Smith, Captain C. Turner, Captain F. L. Wall and Captain B. Wibberly were awarded the Military Cross.

In regard to the hospital work itself, he states that the equipment of the X-ray Department was greatly improved as a result of a generous donation, made shortly before his death, by Mr. A. M. Simpson.

An endeavour has been made to institute a dental college in Adelaide, and the Hospital Board has appointed representatives to further this idea.

After one year's experience at the Night Clinic, the Board has recommended the Government to establish similar centres elsewhere. The staff of the Clinic consists of Dr. Rischbieth, a dispenser, a clerk, one sister, one nurse and two porters. Dr. Rischbieth has given his services in an honorary capacity. The number of patients who were attended were 411 men and 57 women. The Chairman calls attention to the fact that there are probably many who receive no treatment at all or who are treated by quacks or other unqualified persons. It will be remembered that South Australia and New South Wales are the only Australian States that still resist notification and compulsory treatment.

In the Infectious Diseases Block 530 patients were dealt with during the year. In the statistical portion of the report the number of deaths in this Department is given as 28, while in the special report of the Department the number is given as 39. There were 22 deaths from diphtheria, 9 from pertussis, 5 from cerebro-spinal meningitis, 2 from erysipelas, and one from tubercular meningitis. The mortality would be 8% if the number of cases quoted represented the number of cases in which treatment was completed during the year. No information, however, is given to indicate whether this is or is not the case. It appears that in the Hospital itself some 66 persons were under treatment for enteric fever. In the Infectious Diseases Block there were two patients suffering from uncomplicated enteric fever and one from morbilli and enteric fever. From another part of the report we learn that there were 59 cases and 6 deaths, giving a case mortality of 10.1%. The significance of these contradictory statements is not clear.

In the Consumptives' Home 107 persons suffering from pulmonary tuberculosis were admitted during the year, and 45 were still under treatment at the beginning of the year. At the end of the year there were 40 patients in the wards. The number of those discharged was 38, while 74 patients died. The case mortality is, therefore, 65.5%. In the cancer division there were 13 patients in the Hospital at the beginning of the year, 35 were admitted during the year, and 13 were still under treatment at the end of the year. Six persons were discharged and 29 died. The case mortality was 32.8%.

Appended to the report are statistical tables showing the number of persons of each sex who were under tratment for various pathological conditions, the number of operations performed, and the number of patients dealt with in the X-ray, Medical-electric and Massage Departments. In addition, there is a special report on the work carried out in the South Australian Government Laboratory of Bacteriology and Pathology. The ordinary routine work is conducted both for the Adelaide Hospital and for private practitioners. In addition to this, the bacteriological examination of foodstuffs, the examination of drinking water, the testing of disinfectants and the examination of rats are undertaken for the Boards of Health. A considerable amount of work is also conducted in both the Stock and the Vaccine Departments.

Special Correspondence.

(By our Special Correspondent.)

LONDON LETTER.

Medical Work in the Army.

On the occasion of his re-election as President of the Association of Technical Institutions, Sir Alfred Keogh, late Director-General of the Army Medical Service, delivered an interesting address at the Annual Meeting of the Association held at Drapers' Hall on February 22, 1918.

In the coure of his remarks he paid a glowing tribute to the work of the medical profession in the war. He said:—

"The proudest thing I feel in connexion with this campaign is that science has been vindicated in its relation to administration. If we have accomplished anything in this campaign it has been that we have succeeded in preventing those diseases which in all previous campaigns have wiped armies out, literally, and that has been due to the fact that for some years past we have been engaged in teaching the Army what is the relation of science to military work. I am proud of that, because one hopes that from it the country generally will learn a great lesson, and that the great public departments will also learn a lesson, and understand that science, whether on the medical side or any other, can do for this country greater things than have ever been done before, and that without science no branch of administration, and no great public office can do its work, and no good results can be attained.

Our minds must be full of the things that are going to happen in the future. I think we must thank God for one thing at least in connexion with this war, and that is that the country has discovered exactly where we stand in relation to science. One hopes for great things from the Ministry of Reconstruction, and for still greater things from the new Education Bill. So far as I can judge, the Education Bill makes a tremendous step forward. We must all feel that the instruction of children and youths is the most important problem the country has to face at the present moment. We are losing day by day many of those to whom the public had to look as the leaders of the future. Before the war is over, we may say that a great part of the generation will have been swept away. The younger people must be placed in advance of their age and time. They must step into places which, in the ordinary course of events, they would not have been called upon to occupy for many years to come."

Vital Statistics for 1916.

The Registrar-General's return of vital statistics for 1916 in England and Wales, issued on February 20, 1918, shows a reduction of 4.5 in the marriage rate as compared with that for 1915, when it was exceptionally high, and the lowest death-rate of children under one year ever recorded.

The report refers to the difficulty of framing estimates of population owing to the war. These have become so formidable that it is no longer possible to put forward figures otherwise than as rough approximations. As the estimates are for the civil population only, enlistment has been treated as equivalent to emigration. The estimated civil population of England and Wales was 34,500,000 in 1916; 15,000,000 males and 19,500,000 females.

The marriages during 1916 numbered 279,846, a rate of 14.9 persons married per 1,000, 0.6 below the average rate of the decade 1901-10. The marriage rates for 1916 were 49.5 for males and 41.0 for females, the lowest hitherto recorded for females, and the lowest but one for males.

We have thus the curious phenomenon of an unprecedentedly high marriage rate in 1915 succeeded by an almost unprecedentedly low one in 1916. The flood of marriages which set in with the second quarter of 1915 did not ebb until a year later, so that considerably more marriages were registered in the first quarter of 1916 than in the corresponding quarter of any previous year. These violent changes are no doubt the direct consequence of the war, and appear in 1917 to be giving place to a less abnormal state of affairs.

In proportion to the total population, the birth-rate was 20.9 per 1,000 living. The reduction of natality accompanying the war only amounted to 12%, whereas in Germany the fall was reported to have been 40% in the two years 1915 and 1916.

The excess of births over deaths was 277,303. The number of fatal casualties incurred by English and Welsh troops during the year must be very much lower than 277,303, and so the increase in population must have continued. The German statistics record 1,331,000 deaths in 1916, apparently exclusive of at least the great majority of fatal war casualties, as against 1,103,000 births; and the Hungarian figures are for deaths "not in action" 428,057, as against 333,551 births.

The deaths of 508,217 persons were registered, a rate of 13.3 per 1,000. The deaths of children under one year of age numbered 71,646, or 91 per 1,000, the lowest rate ever recorded. Eighty-eight reputed centenarians died, 70 of whom were women.

According to an announcement in the Mercury of June 5, 1918, the Premier of Tasmania has notified the intention of the Government to amend the *Medical Act, 1908*, on the ground that the existing law was unsatisfactory. The

Honourable W. H. Lee contended that the Act gave very arbitrary powers to the Medical Board, and that it provided but a restricted area from which medical men could be drawn for the purpose of practising in the State. The object of the amending Act would be to make it conform to existing conditions.

Books Received.

THE FITTING OUT AND ADMINISTRATION OF A NAVAL HOSPITAL SHIP, by Edward Sutton, Fleet Surgeon, R.N.; 1918. Bristol: John Wright & Sons, Ltd. London: Simpkin, Marshall, Hamilton, Kent Co., Limited. Toronto: The Macmillan Co. of Canada, Limited. Demy 8vo., pp. 110, illustrated. Price 8s.

HUMAN INTESTINAL PROTOZOA IN THE NEAR EAST, by C. M. Wenyon, B.Sc., M.B., B.S., and F. W. O'Connor, M.R.C.S., L.R.C.P., 1917. London: Published for The Wellcome Bureau of Scientific Research, by John Bale, Sons & Danielssen, Ltd. Crown 8vo., pp. 218. Price, 10s. 6d. net.

THE EDINBURGH MEDICAL SERIES (General Editor, John D. Comrie, B.Sc., M.D., F.R.C.P.E.); RADIOGRAPHY AND RADIO-THERAPEUTICS, PART II., RADIO-THERAPEUTICS, by Robert Knox, M.D., M.R.C.S., L.R.C.P.; 1918. London: A. & C. Black, Limited. Royal 8vo. pp. 383, with 78 plates and 337 illustrations in the text. Price, 15s. net.

Medical Appointments.

The appointment of Dr. Arthur Cole as a Medical Referee for the purposes of *The Workers' Compensation Act of 1916* and *The Workers' Compensation Act Amendment Act of 1916*, for the whole of the State of Queensland, is announced in the *Queensland Government Gazette* of June 1, 1918.

During the absence of Dr. E. S. Morris (B.M.A.) on active service, the duties of Medical Superintendent of the Mental Hospital, New Norfolk, Tasmania, are being undertaken by Dr. Peter Lalor.

The appointment of Dr. A. C. Oliver as Public Vaccinator for the Midland District and of Dr. H. G. Phippen for the North-Western District, Victoria, is announced in the *Victoria Gazette* of June 5.

Dr. P. H. Payne (B.M.A.) has been appointed Government Medical Officer at Murgon, Queensland.

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
VICTORIA. (Hon. Sec., Medical Society Hall, East Melbourne.)	All Friendly Society Lodges, Institutes, Medical Dispensaries and other contract practice. Australian Prudential Association Proprietary, Limited. National Provident Association. Life Insurance Company of Australia, Limited. Mutual National Provident Club.
QUEENSLAND. (Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Brisbane United Friendly Society Institute. Townsville Friendly Societies' Medical Union.
SOUTH AUSTRALIA. (Hon. Sec., 3 North Terrace, Adelaide.)	The F.S. Medical Assoc., Incorp., Adelaide. Contract Practice, Appointments at Renmark.
WESTERN AUSTRALIA. (Hon. Sec., Health Department, Perth.)	All Contract Practice Appointments in Western Australia.
NEW SOUTH WALES. (Hon. Sec., 30-34 Elizabeth Street, Sydney.)	Australian Natives' Association. Balmain United F.S. Dispensary. Canterbury United F.S. Dispensary. Leichhardt and Petersham Dispensary. M.U. Oddfellows' Med. Inst., Elizabeth Street, Sydney. Marrickville United F.S. Dispensary. N.S.W. Ambulance and Transport Brigade. North Sydney United F.S. People's Prudential Benefit Society. Phœnix Mutual Provident Society. F.S. Lodges at Casino. F.S. Lodges at Lithgow. F.S. Lodges at Parramatta, Auburn and Lidcombe. Newcastle Collieries — Killingworth, Seaham Nos. 1 and 2, West Wallsend.
TASMANIA. (Hon. Sec., Macquarie Street, Hobart.)	Medical Officers in all State-aided Hospitals in Tasmania.
NEW ZEALAND: WELLINGTON DIVISION. (Hon. Sec., Wellington.)	Friendly Society Lodges, Wellington, N.Z.

Diary for the Month.

June 18.—N.S.W. Branch, B.M.A., Executive and Finance Committee.
June 19.—W. Aust. Branch, B.M.A.
June 19.—S. Sydney Med. Assoc. (N.S.W.).
June 21.—Q. Branch B.M.A., Council.
June 25.—N.S.W. Branch, B.M.A., Medical Politics Committee; Organization and Science Committee.
June 26.—Vic. Branch, B.M.A., Council.
June 28.—N.S.W. Branch, B.M.A.
July 2.—N.S.W. Branch, B.M.A., Council (Quarterly).
July 3.—Vic. Branch, B.M.A.
July 5.—Q. Branch, B.M.A.
July 9.—Tas. Branch, B.M.A., Council and Branch.
July 9.—N.S.W. Branch, B.M.A., Ethics Committee.
July 12.—S. Aust. Branch, B.M.A., Council.
July 12.—N.S.W. Branch, B.M., Clinical.
July 16.—N.S.W. Branch, B.M.A., Executive and Finance Committee.
July 17.—W. Aust. Branch, B.M.A.
July 18.—Vic. Branch, B.M.A., Council.
July 19.—Q. Branch, B.M.A., Council.

EDITORIAL NOTICES.

Manuscripts forwarded to the office of this Journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to *The Medical Journal of Australia* alone, unless the contrary be stated.

All communications should be addressed to "The Editor," *The Medical Journal of Australia*, B.M.A. Building, 30-34 Elizabeth Street, Sydney, New South Wales.

The Honorary Librarian of the New South Wales Branch of the British Medical Association is anxious to complete the series of the *Lancet* at present in the library of the Branch, Volume I., January to June, 1898, Volumes I. and II., January to December, 1908, and Volume I., January to June, 1909, are needed for this purpose. The Librarian will be grateful if any member who is able to present to the library one or more of these missing volumes, either unbound or bound, will communicate with the Honorary Secretary of the Branch, Dr. R. H. Todd, B.M.A. Building, 30-34 Elizabeth Street, Sydney.